SHARP SERVICE MANUAL

CODE : 00ZUPX500VSME

POS TERMINAL

MODEL UP-X500

(V version)

CONTENTS

CHAPTER 1. SPECIFICATIONS . . . . . 1 - 1

CHAPTER 2. OPTIONS . . . . . 2 - 1

CHAPTER 3. FIXING THE HDD UNIT . . . . . 3 - 1

CHAPTER 4. DIAGNOSTICS SPECIFICATIONS . . . . . 4 - 1

CHAPTER 5. CIRCUIT DESCRIPTION . . . . . 5 - 1

CHAPTER 6. TOUCH PANEL CALIBRATION UTILITY . . . . . 6 - 1

CHAPTER 7. CIRCUIT DIAGRAM . . . . . 7 - 1

Parts marked with "⚠" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

SHARP CORPORATION

This document has been published to be used for after sales service only.
The contents are subject to change without notice.

BATTERY DISPOSAL

Contains Lithium Battery. Must be Disposed of Properly.
Contact Local Environmental Officials for Disposal Instructions.

CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED
BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING
TO THE INSTRUCTIONS.

AVOID: SHORT-CIRCUITING THE BATTERY TERMINALS.
KEEP THE BATTERY AWAY FROM FIRE.

∗ WHEN DISPOSING THE BATTERY, FOLLOW THE LOCAL
RULES AND REGULATIONS.

“BATTERY DISPOSAL”

THIS PRODUCT CONTAINS LITHIUM BATTERY.
THIS BATTERY MUST BE DISPOSED OF PROPERLY.
REMOVE THE BATTERY FROM THE PRODUCT AND CONTACT FEDERAL OR STATE ENVIRONMENTAL AGENCIES FOR INFORMATION ON RECYCLING AND DISPOSAL OPTIONS.

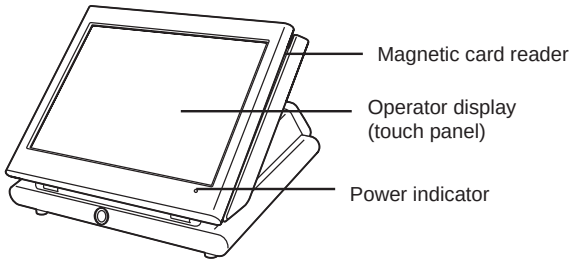
“TRAITEMENT DES ACCUMULATEUR USAGÉS”

CE PRODUIT CONTIENT UN ACCUMULATEUR À LITHIUM.
CET ACCUMULATEUR USAGÉ DOIT ÊTRE TRAITÉ CORRECTEMENT.
ENLEVEZ L’ ACCUMULATEUR DU PRODUIT ET PRENEZ CONTACT AVEC VOTRE AGENCE ENVIRONNEMENTALE LOCALE POUR DES INFORMATIONS SUR LES MÉTHODES DE RECYCLAGE ET DE TRAITEMENT.

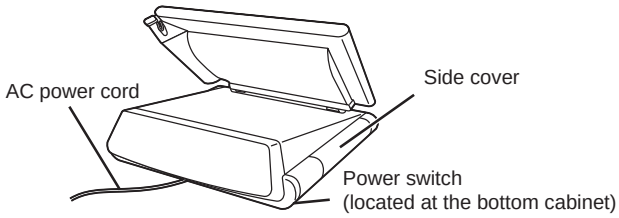
CHAPTER 1. Specifications

1. APPEARANCE

■ Front view



■ Rear view



AC power cord

Plug your terminal into a wall outlet that has a dedicated ground before using.

Power switch

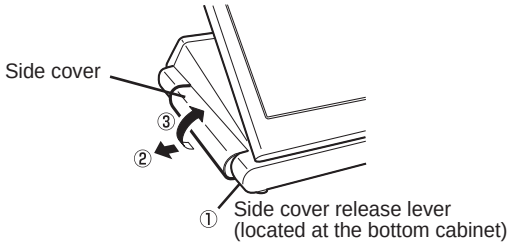
Set the power switch to the ON (I) position after the terminal has been plugged in.

Power indicator

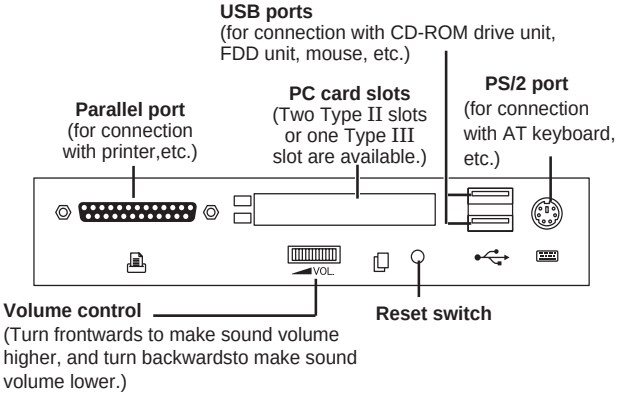
When the power switch is turned on, the power indicator will light up. The indicator will remain on even while the display's backlight is off.

Contactless clerk key

Put the key to the clerk switch.



■ Terminals inside the side cover

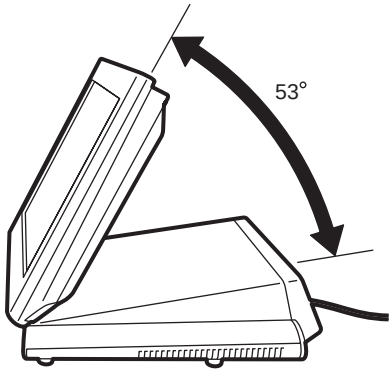

USB ports
(for connection with CD-ROM drive unit, FDD unit, mouse, etc.)
Parallel port
(for connection with printer,etc.)
PC card slots
(Two Type II slots or one Type III slot are available.)
PS/2 port
(for connection with AT keyboard, etc.)
VOL
Volume control
(Turn frontwards to make sound volume higher, and turn backwardsto make sound volume lower.)
Reset switch

■ DISPLAY

Display angle

The display may be tilted for the best viewing angle.
The allowable angle of display is within 53 degrees as illustrated at the right.

Caution: Do not pull the display beyond the maximum tilt angle nor apply excessive pressure to the display.
Make sure to hold the body when pulling the display so that the terminal may not move.



■ RESET SWITCH

[Purpose] This switch is used to reset.

[Outline] The Reset switch is single shot type.

Push ON : This position is used to restart the system when software hang up.

DO NOT insert any object into this switch unless instructed to do.

Doing so may damage or delete the data.

2. RATING

	U	V
Power supply	AC 120V	AC 230 ~ 240V
Power consumption	43W	43W
Ambient temperature and humidity	41 to 95°F(5 to 35°C) 20 to 90%	5 to 35°C (41 to 95°F) 20 to 90%
External dimensions	12.5(W) x 12.2(D) x 11.2(H) 318(W) x 311(D) x 284 (H)	318(W) x 311(D) x 284(H)
Weight	Approximately 12.6lb (5.7kg)	5.7kg

3. HARDWARE

3-1. SYSTEM

Item	Specifications	Note
CPU	VIA Eden Processor	733MHz
Chip set	VIA VT8623+VT8235	
Graphics Chip	VIA VT8623	
Main memory	128Mbytes	DDR-SDRAM MAX.512Mbytes
Video memory	16Mbytes	(Shared with Main memory)
Super I/O	SMSC SIO10N268	
BIOS memory	512Kbytes	Flash ROM

3-2. EXTENTION RAM MODULE

POS Terminal has a socket as 184pin DIMM.
(Local Purchase)
512Mbytes 184pin DIMM
: DDR-SDRAM memory type PC2100 (more than): power 2.5V

3-3. DISPLAY

Item	Specifications	Note
LCD type	TFT LCD	HT12x12-100
Screen size	12.1”	
Resolution	XGA (1024 x 768 dots)	
Module Size	261.5(W) x 199.5(H) x 5.5(D)	
Dot Size	0.240 x 0.240 (mm)	
Active Area	245.8 x 184.3 (mm)	

3-4. TOUCH PANEL

Item	Specifications	Note
Type	Analog touch panel	N010-0554-T802
Module Size	261.4(W) x 198.8(H) x 2.8(D) (mm)	
Viewing Area	247.7(W) x 186.5(H) (mm)	
Active Area	246.5(W) x 185.3(H) (mm)	
Number of Positions	4096 x 4096 Positions	

3-5. ETHERNET

Item	Specifications	Note
Controller	VT6103	
Speed	10Mb/s or 100Mb/s	
connector	RJ45	

3-6. COM PORTS

POS Terminal has 3 COM ports as RS232 interface.
In order to supply +5V power, CI signal and +5V power supply of COM2 can be switched.
The +5V power consumption of COM2 is Max 500mA.

COM1,COM2,COM3 : D-sub 9 pin
: Pin assign
1 pin CD
2 pin RD
3 pin SD
4 pin ER
5 pin GND
6 pin DR
7 pin RS
8 pin CS
9 pin CI/+5V

3-7. HARD DISK DRIVE

Item	Specifications	Note
Type	2.5 inch Hard Disk Drive	Fujitsu MHT2030AT
Interface	ATA	
Capacity	30Gbytes	

3-8. PC-CARD & USB2.0 & PS/2 & VGA interface

PC-CARD slot & USB2.0 interface & PS/2 interface & VGA interface can build in this machine.

- PC-CARD interface : 2 ports (Type II x 2 or Type III x 1)
  Two 16bit type PCMCIA cards can't be used at same time.
- USB2.0 interface : 2 ports
  Power consumption : +5V max. 0.5A
- PS/2 interface : 1 port
- VGA interface : 1 port

3-9. OPTIONAL DEVICE INTERFACE

POS Terminal has 2 Drawer I/Fs, a Printer I/F, and a Customer display I/F.

- Drawer I/F : used for ER-03DW, ER-04DW and ER-05DW
- Customer display I/F : used for UP-P20DP/DPB or UP-I20DP
- Printer I/F : used for dongle

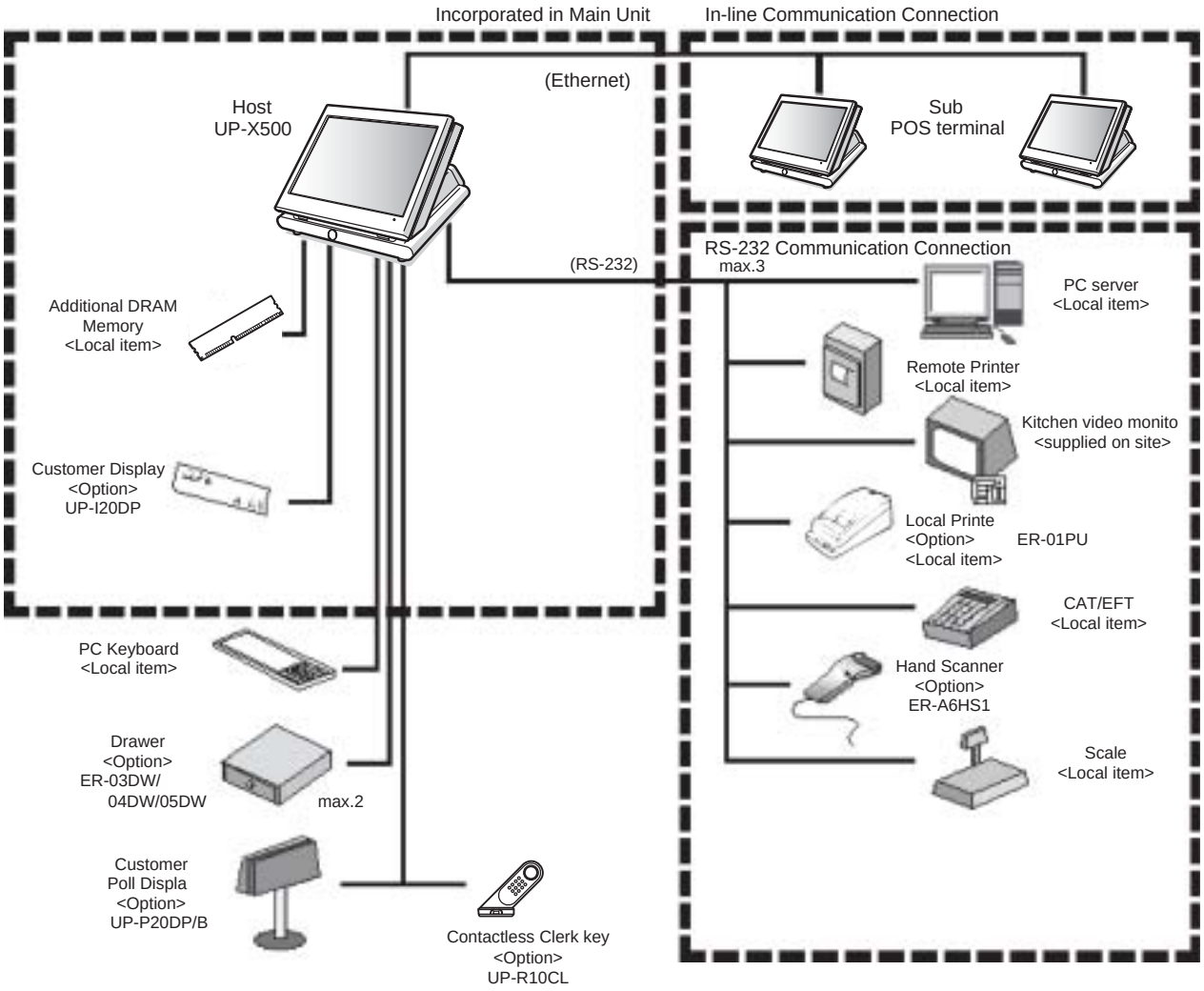
Caution: UP-P20DP/DPB and UP-I20DP can not be used simultaneously with installed on the same system because of their power capacity.

4. SOFTWARE

Item		Specification	Note
O/S	Provision	Any OS is not pre-installed	
	Available OS	Windows 2000 Professional	Local purchesed
		Windows XP Professional	Local purchesed
		Windows XP Home	Local purchesed
OPOS	Available OS	Windows 2000 Professional	
		Windows XP Professional	
		Windows XP Home	
Device Drivers	Drivers	POS drivers	provided by SHARP
	for Windows 2000	Touch keyboard, MCR,	
	for Windows XP	Drawer, etc.	
	Additional device driver		Local purchased
BIOS	Contents	System, Control, etc.	in 512 KB Flash ROM
Application software	Provision	For Hospitality	Local purchased

CHAPTER 2. OPTIONS

1. SYSTEM CONFIGURATION



2. OPTIONS

Item	Model Name	Specification	Note
Customer Display	UP-I20DP	2 line 20 digits dot display Mounted in the cabinet	
Customer Pole display	UP-P20DP	2 line 20 digits dot display External pole display	
	UP-P20DPB		
Remote Drawer	ER-03DW		
	ER-04DW		
Receipt & Journal Printer	ER-01PU	2 station (Receipt/Journal) printer	
	ER-01PUG		
Hand Scanner	ER-A6HS1	for reading barcode	

3. LOCALLY SUPPLIED OPTIONS

No.	NAME	DESCRIPTION	NOTE
1	DIMM	168pin SD-RAM	Max. 256Mbytes *1
2	Hard disk drive	2.5 inch type	*2
3	PC keyboard	PS/2 type PC keyboard	
4	Application software		
5	Additional device drivers		

***1 Extension RAM module**

[Device] 168pin DIMM

[Outline] UP-X500 has a socket as DIMM.
The following DIMM memory specification must be adhered to.

[Specification]

	168pin.DIMM
Type	SD-RAM type
Access time	PC100 (more than)
Power	3.3V
Refresh cycle	4096/64 msec.
Refresh type	AUTO
Power consumption	1400 mA (less than)

***2 Hard disk drive**

[Device] 2.5 inch type Hard disk drive

[Outline] It is necessary to satisfy with 2.5 inch Hard disk drive specification as follows.

[Specification]

	2.5 inch Hard disk drive
Maker	Fujitsu
Model	MHN2150AT
Capacity	15 Gbytes
Interface	ATA-4

4. SERVICE OPTIONS: No

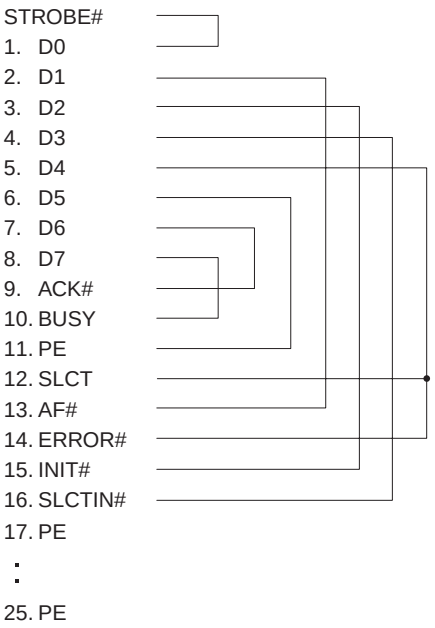
5. SUPPLIES TOOLS: No

6. SERVICE TOOLS: No

No.	NAME	PARTS CODE	PRICE	DESCRIPTION
1	Parallel loop back connector	UKOG-2366BHZZ	BM	
2	MCR test card	UKOG-6718RCZZ	BE	for UP-E12MR2
3	RS232 loop back connector	UKOG-6705RCZZ	BC	for RS232 connector

6-1. PARALLEL LOOP BACK CONNECTOR: UKOG-2366BHZZ

This connector is connected between CN10/11 of the main PWB and the parallel port through the Dongle cable (QCNW-7858BHZZ) for checking the parallel port during execution of diagnostics.



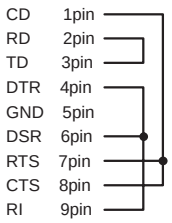
6-2. MCR TEST CARD: UKOG-6718RCZZ

- Used when executing the diagnostics of the UP-E12MR2.
- External view

6-3. RS232 LOOP BACK CONNECTOR: UKOG-6705RCZZ

Connected to the RS232 connector (D-SUB 9 pin: COM1, COM2) of the UP-5900 and ER-A8RS, and used to check loop signals when executing diagnostics.

- Connection diagram

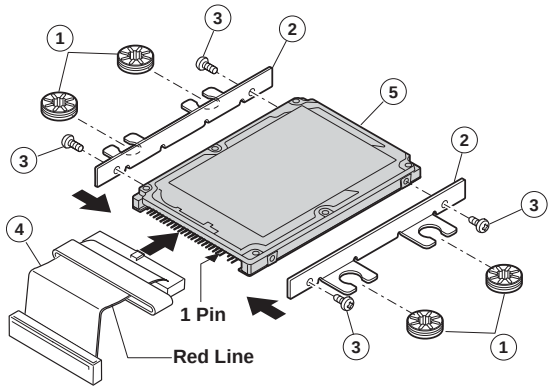


CHAPTER 3. Fixing the HDD unit

1. FIXING THE HDD UNIT

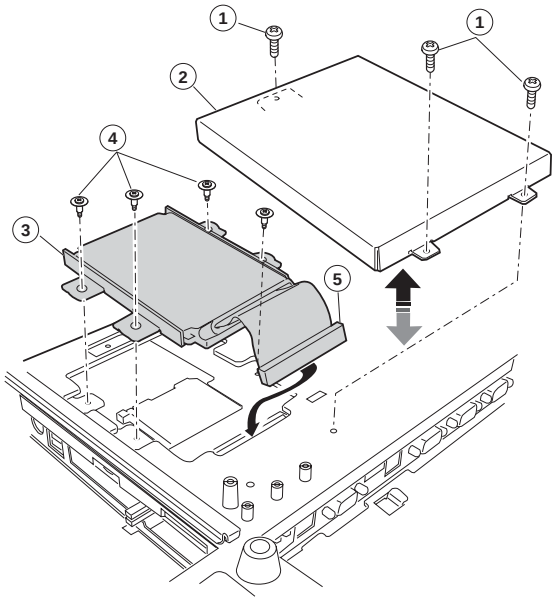
1-1. Assembly HDD unit

Attach the holder ① to the angle ②, and fix the assembly to the HDD ⑤ with the screw ③. Connect the connector ④ to the HDD ⑤. (Be careful of the direction.)



1-2. Fixing the HDD unit

Remove the screw ① and remove the HDD cover ②. Disconnect the connector ⑤ and install the HDD unit ③ with the screw ④.



CHAPTER 4. DIAGNOSTICS SPECIFICATIONS

1. OUTLINE

This manual describes the diag specifications and operating procedures of the UP-X500 series.

The main unit diag of this manual is applicable to the following models:

Main unit diag: UP-X500 series.

The diag program is supplied in the following test media:

(1) UP-X500 series service diag.

2. DIAL BOOT/TERMINATTION

The procedures to boot and terminate the diag are described below.

2-1. WITH THE MAIN POWER OFF, INSERT THE TEST MEDIA INTO THE PC CARD SLOT.

2-2. TURN ON THE MAIN POWER.

2-3. THE DISPLAY SHOWS THE MENU TO SELECT WHETHER A LOG FILE IS TAKEN FOR USE WITH THE DIAG MEDIA (PC CARD) OR NOT.

[Do you take a LOG~FILE on FD?]
[No Log ↔ Take a Log]
Select【No Log】or【Take a Log】with the cursor keys, and press [ENTER] key to execute.
When【No Log】is executed: No log file is made.

When【Take a Log】is executed:
A log file is made and saved on the diag media as is conventionally done.
The current state of the media (Read/Write s a Read Only) is displayed on the front for several seconds, and the display shifts to the next step.

2-4. THE DIAG MAIN MENU IS DISPLAYED.

```
                    UP-X500 Serise Diagnostics

F1:Trouble Shooting    F2:Product Check    F3:Single P.W.B. Check

[Main Unit]  UP-X500V  UP-X500U  UP-X300V  UP-X300U

[Item]
*Information                  * Clerk
*VGA I/F LCD                  * Contactlrss Clerk
*106 Keyboard                 * PCP3
*Centro I/F(AT)
*Buzzer
*RTC
*Floppy Disk
*Hard Disk (std)
*DRAM
*COM1/2
*Line Display
*LAN
*Drawer
*MCR
*PCMCIA

   CURSOR:Move   ENTER:Select   F10:Diag End   F1-F3:Diag Mode change
```

2-5. EACH INDIVIDUAL TEST CAN BE PERFORMED FROM THE MAIN MENU BY KEY OPERATIONS. (REFER TO 3. KEY OPERATIONS.)

2-6. TO TERMINATE THE DIAG, PRESS [ESC] KEY TO RETURN TO THE STATE WHERE NO ITEM IS SELECTED ON THE MAIN MENU DISPLAY, AND PRESS [FA] (F10) KEY TO GO TO THE MS-DOS PROMPT.

2-7. CHECK THAT THE MS-DOS PROMPT IS DISPLAYED, AND TURN OFF THE MAIN POWER.

3. KEY OPERATIONS

The key operations for execution of the diag are described below.

[F1]	:	Trouble shooting When [F1] key is pressed on the main menu, the menu is shifted to the trouble shooting (for service repair) menu. Press [ENTER] key to allow selection of [Item] (individual test item).
[F10]	:	The display returns to the MS-DOS prompt. With no [Item] (individual test item) selected on the main menu, when [FA] key is pressed, the diag program is terminated and the display returns to the MS-DOS prompt.
[ESC]	:	Used to terminate, reset, and cancel selection of each individual test item. Pressing [ESC] key more times than necessary does not cause a problem, and it does not return to the previous stage from the main menu. When [F7] key is pressed 7 times continuously on the main menu. the test media is switched to Read/Write media s a Read Only media. This function, however, is disabled if [No Log] is selected when booting the diag.
[Cursor]	:	Used to shift to a test item and input position.
[Space]	:	Used to set selection. Also used to start/stop read/write test of the disk.
[Enter]	:	Used to execute the selected item and to determine an input item.
[BS]	:	Back space
Other	:	Alphanumeric input 1~0, A~F

4. INDIVIDUAL TEST ITEMS (GENERAL, TEST ITEMS, TEST CON TENTS, ERROR CONTENTS)

4-1. DRAM

4-1-1. Outline

The DRAM test is performed.
The memory check program writes data of a certain pattern into the DRAM, and reads data to perform comparison check and parity check.
The test memory area varies depending on the setup utility setting (CMOS area setting). When an error occurs during test, the error information is displayed on real time.

4-1-2. Jig to be used

- UP-X500 series main unit diag execution media x 1
- Expansion memory unit (DIMM) x 1

The above jigs must be installed or removed with the power OFF.

5-1-3. Test Item

The purposes of this test are as follows:

- Write/Read-Verify Test
- Error Table

4-1-4. Test Contents

(1) Write/read-verify Test

[Test condition setting]

According to the capacity of installed memory, Write/Read-Verify test is performed in the following range.

Installed memory size	Test range
128MB (Slandard)	100000H~7FFFFFFH
640MB (DIMM 512MB)	100000H~FFFFFFFH

[Test content]

Test data are written into 64KB area for every 1MB, and the same area is read to make comparison test.
Test data are in the four patterns: 0000h, 5555h, AAAAh, FFFFh.

(2) Error Table

The content of an error generated (logging) during execution of test.

4-1-6. Test Display

(DRAM test execution test)

```
DRAM Test

DRAM Sequential write/read-verify Test
Error Table




CURSOR:Move      ENTER:Select      ESC:Exit
```

On the above menu, use [↑] and [↓] keys to select a test item. Press [ENTER] key to execute the test. When [ESC] key is pressed, the display returns to the initial menu.
(DRAM sequential write/read-verify test execution display)

```
DRAM Test

Test Executing
Data:  xxxxh          Slot-0   0xxxMB
Rate:  xx %           Slot-1   0xxMB
Pass count = 0000     Total    0xxMB


ENTER:Stop  or  Restart      ESC:Exit
```

The installed memory capacity is displayed in ⬚.

In the column of “Data: ” the test data are displayed.

When an error occurs, the error occurring address, write test data, and read data are displayed. (They are logged in memory simultaneously.)

4-1-7. Error Contents

When there is any hardware abnormality related to the DRAM, the following error message is displayed.

```
DRAM Memory write/read data hasn't coincided
ADDRESS XXXXXXXXX WRITE DATA XXXXh READ DATA XXXXh
```

4-2. Floppy Disk

4-2-1. Outline

This test is used to check the operations of the FD I/D section.
By this test, the FDD drive and the FD controller can be checked. In each test, selection of aging/error/stop/1 pass can be made and the test time is displayed.

4-2-2. Use Treatment Device

UP-X500 series main unit diag execution media	x 1
FD media for work	x 1

4-2-3. Test Item

The purposes of this test are as follows:

[Read mode test]

- Sequential read only test
- Target sector read test

[Write mode test]

- Sequential write/read & compare test
- Target sector write/read & compare test
- Error table display

4-2-4. Test Contents

[READ MODE TEST]

(1) Sequential Read Only Test

[Test conditions setting]

- Test area setting

  Cylinder: The test area is set in the range of 00 s a 79 cylinder areas.

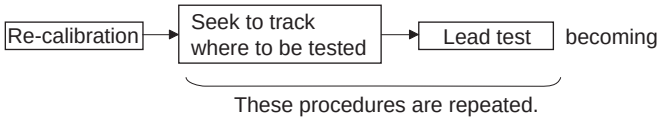
  Sector: The number of sectors to be checked is set in the range of 00 ↔ 18 (9).

- Retry number setting (0~4)
  The retry number in case of an error occurs is set.

- Error stop/continue/1 pass
  In case of an error, selection is made whether interrupt is made or not.
  Also used to select whether the test is executed or not by 1 pass.

[Test contents]

The sequential read test for every one track is executed in the range set as above.
Completion of the read test in the set range is counted as 1 pass.
The operation of this test is as shown below:



(2) Target Sector Read Test

[Test condition setting]

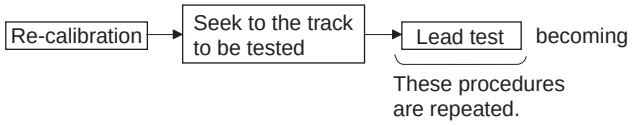
• Test area setting

Cylinder	:	The cylinder number to be checked is set in the range of 00 ↔ 79.
Head	:	The head number to be checked is set in the range of 0 ↔ 1.
Sector	:	The sector number to be checked is set in the range of 00 ↔ 18 (9).

• Retry number setting (0 ~ 4)
The retry number in case of an error is set.

• Error Stop/Continue/1 pass
In case of an error, selection is made whether interrupt is made or not.
Also used to select whether the test is executed or not by 1 pass.
[Test contents]
The sequential read test for every one track is executed in the range set as above.
Completion of the read test in the set range is counted as 1 pass.

The operation of this test is as shown below:



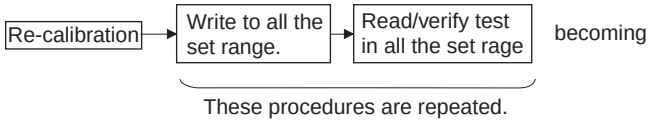
(3) Sequential Write/Read & Compare Test

[Test condition setting]

Similar to the above (2). However, the cylinder set range is 01 ↔ 79.

[Test contents]

The worst pattern data are written into each track in all the set range. Then perform the read/verify check. When the write/read test in the set range in the direction of 0 ↔ 79 cylinder is completed, it is considered as 1 pass.
The operation of this test is as shown below:



When writing data, write different data from those originally stored.
(Worst pattern data)
Word data: There are two kinds of data: B6DBh, 6DB6h.

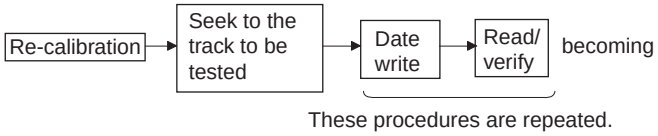
(4) Target Sector Write/Read-Compare Test

[Test condition setting]

Similar to the above (2). However, setting of the retry number is omitted.

[Test contents]

The write/read test in the set range is executed.
When the write/read test in the set range is completed, it is considered as 1 pass.
The operation of this test is as shown below:

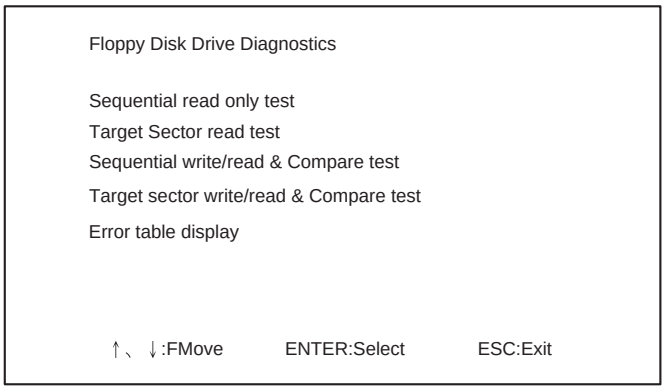


(5) Error table display

The error contents generated in procedures (1) ~ (4) are displayed for each test item. The display items are test item, test condition, drive, cylinder, head, sector, error contents, and hour/minute/second. The maximum number of display items is 50 for each test.

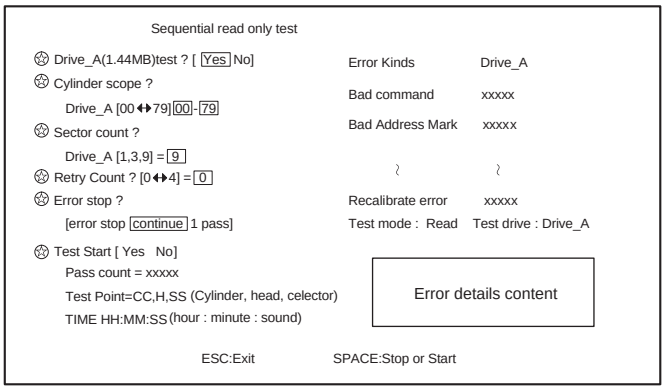
4-2-5. Test Display

(1) Floppy Disk Test menu display



On the above menu, use [↑] and [↓] keys to select a test item. Press [ENTER] key to execute the test. When [ESC] key is pressed, the display returns to the initial menu.

(2) Sequential read only test execution display


Sequential read only test
Drive_A(1.44MB)test ? [Yes No]
Cylinder scope ?
Drive_A [00↔79] 00 - 79
Sector count ?
Drive_A [1,3,9] = 9
Retry Count ? [0↔4] = 0
Error stop ?
[error stop continue 1 pass]
Test Start [Yes No]
Pass count = xxxxx
Test Point=CC,H,SS (Cylinder, head, celector)
TIME HH:MM:SS (hour : minute : sound)
Error Kinds Drive_A
Bad command xxxxx
Bad Address Mark xxxxx
Recalibrate error xxxxx
Test mode : Read Test drive : Drive_A
Error details content
ESC:Exit
SPACE:Stop or Start

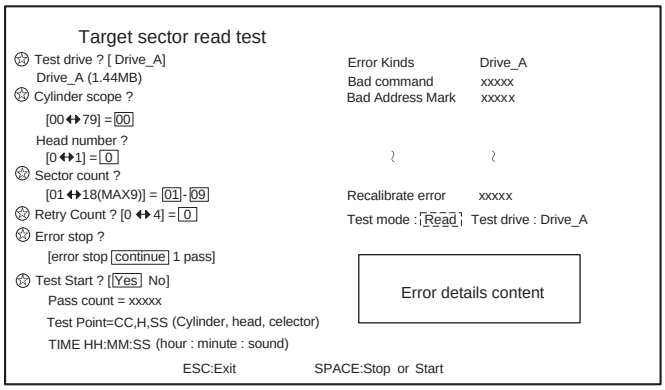
Select an item in each position indicated with "⊛"
(In the above display, the item surrounded by a ▭ is selected and the value surrounded by a ▭ is selected.)
When, in the above display, "Pass count" is counted up (when the test point is counted from 00.0.01 to 79.1.10, Pass count is counted up by 1) and all the error counters of all the error kinds are not counted up (remaining at 00000), the test is OK.

During execution of the test, when [SPACE] key is pressed, the test is interrupted.

During interruption of the test, when [SPACE] key is pressed, the test is resumed.

During execution or interruption of the test, when [ESC] key is pressed, the display returns to the menu of (1).

(3) Target Sector Read Test execution display


Target sector read test
Test drive ? [Drive_A]
Drive_A (1.44MB)
Cylinder scope ?
[00↔79] = 00
Head number ?
[0↔1] = 0
Sector count ?
[01↔18(MAX9)] = 01 - 09
Retry Count ? [0 ↔ 4] = 0
Error stop ?
[error stop continue 1 pass]
Test Start ? [Yes No]
Pass count = xxxxx
Test Point=CC,H,SS (Cylinder, head, celector)
TIME HH:MM:SS (hour : minute : sound)
Error Kinds Drive_A
Bad command xxxxx
Bad Address Mark xxxxx
Recalibrate error xxxxx
Test mode : Read Test drive : Drive_A
Error details content
ESC:Exit SPACE:Stop or Start

Select an item in each position indicated with "⊛"
(In the above display, the item surrounded by a ▭ is selected and the value surrounded by a ▭ is selected.)
When, in the above display, "Pass count" is counted up and all the error counters of all the error kinds are not counted up (remaining at 00000), the test is OK.
Procedures to interrupt, resume, or terminate the test are similar to the above (3).

(4) Sequential Write/Read & Compare Test execution display

Similar to the above (3). The different points are as follows:

Cylinder scope ?
Drive_A [01 - 79] items differ from those in (3). (Different points are indicated with ⬭.)
Test mode: ⬚ Different points from (3) are indicated with a rectangle.

When data write	write	displayed.
When data compare	verify	

(5) Target sector write/read & Compare test execution display

Similar to the above (3). The different points are as follows:

Test mode: ⬚ Different points from (3) are indicated with a rectangle.

When data write	write	displayed.
When data compare	verify	

4-2-6. Error contents

(1) Sequential read only test

(2) Target sector read test

- **Bad command**
  (A command is terminated abnormally. (Under BIOS CALL INT13H status))
- **Bad address mark**
  (The address mark cannot be found. (Under BIOS CALL INT13H status))
- **Write protect 1**
  (The disk is set to write-protect. (Under BIOS CALL INT13H status))
- **Record not found**
  (The sector cannot be found. (Under BIOS CALL INT13H status))
- **Diskette change**
  (The diskette was changed. (Under BIOS CALL INT13H status))
- **Bad DMA boundary**
  (A DMA overrun occurs. (Under BIOS CALL INT13H status))
- **Bad error**
  (An abnormality occurs in the CPU. (Under BIOS CALL INT13H status))
- **Bad controller**
  (A trouble occurs in the controller. (Under BIOS CALL INT13H status))
- **Seek error**
  (A trouble occurs in seek operation. (Under BIOS CALL INT13H status))
- **Time out error**
  (Time out occurs or the drive is not ready. (Under BIOS CALL INT13H status))
- **Other error**
  (An error other than the above occurs. (Under BIOS CALL INT13H status))
- **Recalibrate error**
  (An error occurs when recalibrate is executed.)
- **DSK not ready**
  (There is no floppy disk in the FD drive or the floppy disk is not formatted.)

(3) Sequential write/read & compare test

(4) Target sector write/read & compare test

- Compare error
  (When the write data differ from read data, this error occurs.)

4-3. IDE I/F & Hard Disk (Std & Opt)

4-3-1. Outline

This test is used to display information on the built-in hard disk and the option hard disk test and data in the hard disk.
The test items are as follows:

- Read test: Seek (sequential) test, read only (target cylinder, target sector), dump test
- Write test: Write verify (target cylinder, target sector), patch test
- Other test: Drive status display, controller check, smart function ON/OFF, error information display

4-3-2. Jig to be used

UP-X500 series main unit diag execution media x 1

4-3-3. Test items

The purposes of this test are as follows:

[Read mode test]

- Drive status display
- Sequential seek test
- Seek & read test
- Read test
- Target sector read test
- HD dump test
- Current check test
- Smart ON/OFF
- Smart value display

[Write mode test]

- Seek & write/read-verify test
- Write/read-verify test
- Target sector write/read-verify test
- HD patch test
- Error table

4-3-4. Test items

[Read mode test]

(1) Drive status display

The following standard values of hard disk drive are displayed:

- Drive type
- Memory capacity
- Number of cylinders
- Number of heads
- Number of sectors
- Number of LBA
- Firmware version

(2) Sequential seek test

[Test condition setting]

- LBA range (0 ~ final cylinder)
  The LBA range for test is set.
- Retry count (0 ~ 4)
  The number of retry in case of an error is set.
- Error stop/Continue/1 pass
  In case of an error, selection is made whether interrupt is made or not.
  Also used to select whether the test is executed or not by 1 pass.
- Test start? (Yes/No)
  Used to select whether the test is executed or not.

[Test contents]

Sequential seek is executed in the LBA range set in the above procedure. (In the sequence of 0 → Final cylinder). When the seek test of the set range is completed, it is considered as 1 pass. When an error occurs during the above test, retry is repeated by the set number of retry. If an error still occurs after completion of retry by the set n umber of retry, error logging is made to the HD and the DRAM.
When "Error stop" is set in the test condition setting, if an error occurs during the above test, the error display is interrupted. To resume the test, press [SPACE] key.
When "Continue" is set, if an error occurs, the operation is not interrupted though the error display is made.

When "1 Pass" is set, a series of tests is executed only once.

(3) Seek & read test

[Test conditions setting]

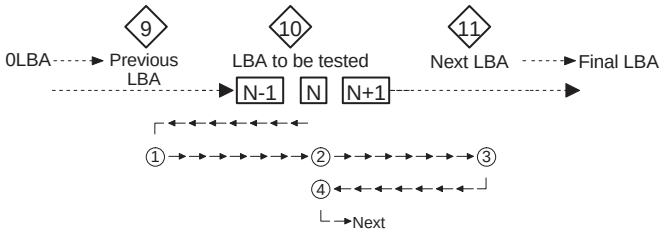
Similar to the above (2). The following setting must be additionally performed. Sector count (0 ~ Final sector)
The number of sectors to be read for one operation.

[Test contents]

Sequential read is executed for every sector in the LBA range set by the above procedure. (In the direction of 3 ~ Final cylinder)
When the write/read test in the set range is completed, it is considered as 1 pass.
Before execution of read, however, seek is made to the previous LBA and the next LBA.

[Head movement]

When reading an LBA (N), the head moves as follows:



In procedures ② and ①, read is executed.

When an error occurs during the above test, retry is repeated by the set retry number. If an error still occurs after completion of retry by the set retry number, error logging is made to the DRAM.
When "Error Stop" is set in the test condition setting, if an error occurs in the above test execution, the error display is interrupted. To resume the test, press [SPACE] key.
When "Continue" is set, if an error occurs, the operation is not interrupted though the error display is made.
When "Pass" is set, a series of tests is executed only once.

(4) Read test

[Test condition setting]

Similar to the above (3).

[Test contents]

Sequential read is executed for every sector in the LBA range set in the above procedure. (In the direction of 0 → Final cylinder).
When the read test of the set range is completed, it is considered as 1 pass. When an error occurs during the above test, retry is repeated by the set number of retry. If an error still occurs after completion of retry by the set n umber of retry, error logging is made to the DRAM.
When "Error stop" is set in the test condition setting, if an error occurs during the above test, the error display is interrupted. To resume the test, press [SPACE] key.
When "Continue" is set, if an error occurs, the operation is not interrupted though the error display is made.
When "1 Pass" is set, a series of tests is executed only once.

(5) Target sector read test

[Test condition setting]

- LBA range (0 - Final cylinder)
  The LBA range to be tested is set.
- Sector count (0 - Final cylinder)
  The number of sectors to be tested is set.
- Retry count (0 - 4)
  The number of retry in case of an error is set.
- Error stop/Continue/1 Pass
  In case of an error, selection is made whether interrupt is made or not.
  Also used to select whether the test is executed or not by 1 pass.
- Test start? (Yes/No)
  Selection is made whether the test is executed or not.

[Test contents]

Read is executed for the area of the sector number in the LBA range set in the above procedure.
When the read test is completed in the set area, it is considered as 1 Pass.
When an error occurs during the above test, retry is repeated by the set number of retry. If an error still occurs after completion of retry by the set n umber of retry, error logging is made to the DRAM.
When "Error stop" is set in the test condition setting, if an error occurs during the above test, the error display is interrupted. To resume the test, press [SPACE] key.
When "Continue" is set, if an error occurs, the operation is not interrupted though the error display is made.
When "1 Pass" is set, a series of tests is executed only once.

(6) HD dump test

[Test condition setting]

- Logical block address (0 - Final LBA)
  A certain LBA number to be displayed is set.

[Test contents]

The sectors set in the above are displayed in the unit of 256byte.
Hex data and ASCII characters are displayed.
By key operations, the following 256 byte data or the previous 256 byte data can be sequentially displayed.

(7) Controller check test

The diag command built in the hard disk is executed to check the hard disk controller.
[Write mode test]
When the following test is executed, the HDD data will be destroyed.

(8) Smart ON/OFF

Used to select ON/OFF of the smart function of the hard disk.

(9) Smart value display

This function is used to display the list of the values saved in the hard disk and backed up them to the diag media. This function is valid only when the smart function is ON.

(10) Seek & write/read-verify test

[Test condition setting]

Similar to the above (3).

[Test contents]

The worst pattern data are written for every sector into the LBA range set in the above sequentially.
Then read/verify check is executed for every track.
The read/verify check is executed only once.
(1 Pass text)

In the direction of 0 a Final LBA, write is executed.
In the direction of 0 a Final LBA, read/verify check is executed.
In the direction of 0 a Final LBA, write is executed.
In the direction of 0 a Final LBA, read/verify check is executed.

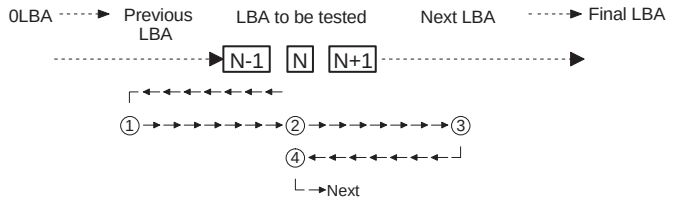
When writing data, write different data from those stored previously.

Before executing write/read, seek is made to the previous LBA or the next LBA of the target LBA.

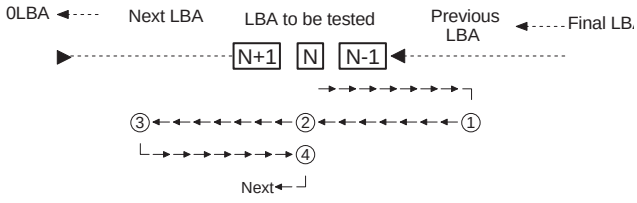
(Head movement)

When reading an LBA (N), the head moves as follows. (The head arm oscillates back and forth.)

In the direction of 0 → LBA



In the direction of 0 ← LBA



(Worst pattern data)

There are two types of word data: B6DBh, and 6DB6h.
When an error occurs during the above test, retry is repeated by the set number of retry. If an error still occurs after completion of retry by the set number of retry, error logging is made to the DRAM.
When "Error stop" is set in the test condition setting, if an error occurs during the above test, the error display is interrupted. To resume the test, press [SPACE] key.
When "Continue" is set, if an error occurs, the operation is not interrupted though the error display is made.
When "1 Pass" is set, a series of tests is executed only once.

(11) Write/read-verify test

[Test condition setting]

Similar to the above (9).

[Test contents]

The worst pattern data are written for every sector into the LBA range set in the above sequentially.
Then read/verify check is executed for every track.
The read/verify check is executed only once.

(1 Pass text)

In the direction of 0 a Final LBA, write is executed.
In the direction of 0 a Final LBA, read/verify check is executed.
In the direction of 0 a Final LBA, write is executed.
In the direction of 0 a Final LBA, read/verify check is executed.

When writing data, write different data from those stored previously.

(Worst pattern data)

There are two types of word data: B6DBh, and 6B6Gh.
When an error occurs during the above test, retry is repeated by the set number of retry. If an error still occurs after completion of retry by the set n umber of retry, error logging is made to the DRAM.
When "Error stop" is set in the test condition setting, if an error occurs during the above test, the error display is interrupted. To resume the test, press [SPACE] key.
When "Continue" is set, if an error occurs, the operation is not interrupted though the error display is made.
When "1 Pass" is set, a series of tests is executed only once.

(12) Target sector write/read-verify test

(Test condition setting)

Similar to the above (5).

[Test contents]
The write/read/verify test is executed for the sector number in the LBA range set in the above.
When the write/read test in the set range is completed, it is considered as 1 Pass.
When an error occurs during the above test, retry is repeated by the set number of retry. If an error still occurs after completion of retry by the set n umber of retry, error logging is made to the DRAM.
When "Error stop" is set in the test condition setting, if an error occurs during the above test, the error display is interrupted. To resume the test, press [SPACE] key.
When "Continue" is set, if an error occurs, the operation is not interrupted though the error display is made.
When "1 Pass" is set, a series of tests is executed only once.

(13) HD patch test (Utility)

[Test condition setting]

Similar to the above (6). However, the LBA range is set to 000 - Final LBA.

[Test contents]

The sectors set in the above are displayed in the unit of 256 byte.
Hex data and ASCII data are displayed.
By key operations, the following 256 byte data or the previous 256 byte data can be sequentially displayed.
After converting data on the display, it is written into the selected set position.

(14) Error table display (Diag)

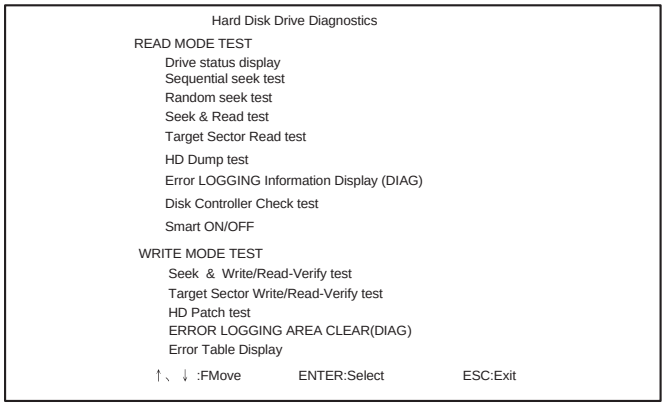
In case of an error in the previous tests (1) ~ (12), error information is saved in the DRAM. This function is used to display the information.
If there is no information, OK or NO ERROR is displayed.

(15) Other supplementary note

Error information if recorded in the sequence of occurrence up to 44 items. No further error information is recorded.

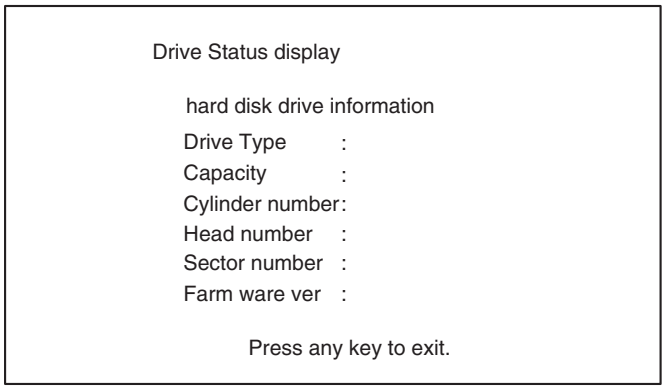
4-3-5. Test display

(1) Hard disk test menu



Select an test item with [↑] and [↓] keys on the above menu and press [ENTER] key to start the test. When [ESC] key is pressed, the display returns to the initial menu.

(2) Drive status display execution display

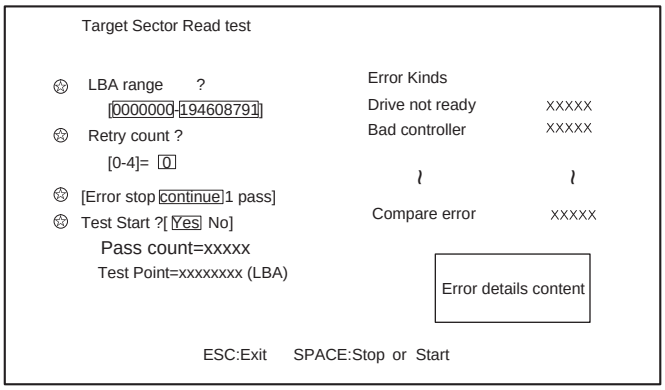


The standard value of the hard disk is displayed.

Drive type	: Hard disk drive name
Capacity	: Memory capacity of the hard disk
Cylinder number	: Max. cylinder number
Head number	: Max. head number
Sector number	: Max. sector number
Lba number	: LBA number
Firmware Ver.	: Firmware version No.

When any key is pressed, the test is terminated and the display returns to the menu display of the previous (1).

(3) Sequential seek test execution display



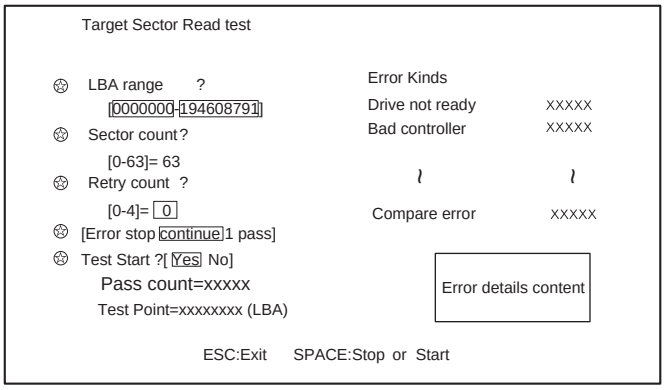
Select an item in each position indicated with "⊛"
(In the above display, the item surrounded by a ▭ is selected and the value surrounded by a ▭ is selected.)
When, in the above display, "Pass count" is counted up (when the test point is counted from 000 to the final LBA, Pass count is counted up by 1) and all the error counters of all the error kinds are not counted up (remaining at 00000), the test is OK.

During execution of the test, when [SPACE] key is pressed, the test is interrupted.

During interruption of the test, when [SPACE] key is pressed, the test is resumed.

During execution or interruption of the test, when [ESC] key is pressed, the display returns to the menu of (1).

(4) Seek & read test execution display

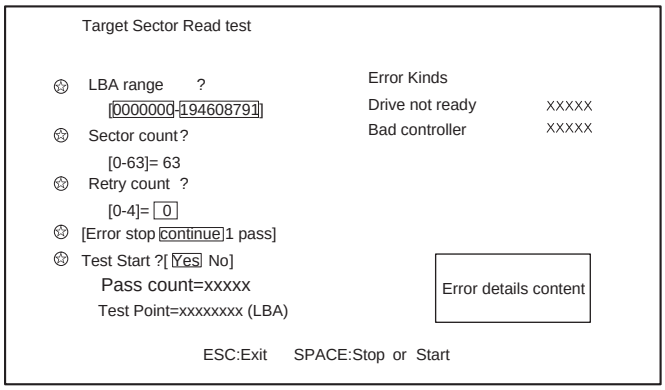


Select an item in each position indicated with "⊛"
(In the above display, the item surrounded by a ▭ is selected and the value surrounded by a ▭ is selected.)
When, in the above display, "Pass count" is counted up (when the test point is counted from 000 to the final LBA, Pass count is counted up by 1) and all the error counters of all the error kinds are not counted up (remaining at 00000), the test is OK.
The procedures to interrupt, resume, and terminate the test are the same as those of the above (3).

(5) Read test execution display

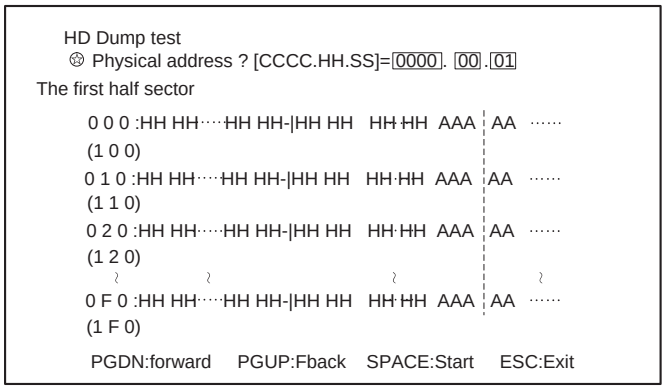
Similar to the above (4).

(6) Target sector read test execution display



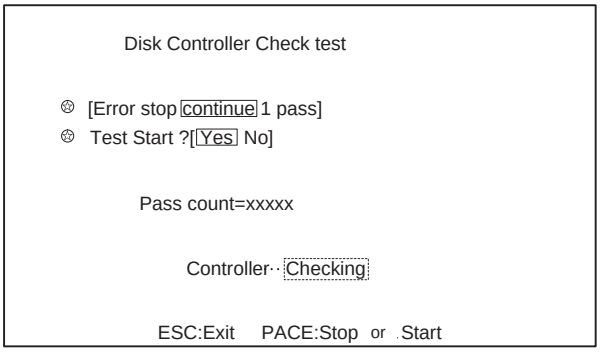
Select an item in each position indicated with "⊛"
(In the above display, the item surrounded by a ▭ is selected and the value surrounded by a ▭ is selected.)
When, in the above display, "Pass count" is counted up and all the error counters of all the error kinds are not counted up (remaining at 00000), the test is OK.
The procedures to interrupt, resume, and terminate the test are the same as those of the above (3).

(7) HD dump test execution display


HD Dump test
⊛ Physical address ? [CCCC.HH.SS]=0000. 00.01
The first half sector
0 0 0 :HH HH·····HH HH-|HH HH HH·HH AAA AA ·····
(1 0 0)
0 1 0 :HH HH·····HH HH-|HH HH HH·HH AAA AA ·····
(1 1 0)
0 2 0 :HH HH·····HH HH-|HH HH HH·HH AAA AA ·····
(1 2 0)
0 F 0 :HH HH·····HH HH-|HH HH HH·HH AAA AA ·····
(1 F 0)
PGDN:forward PGUP:Fback SPACE:Start ESC:Exit

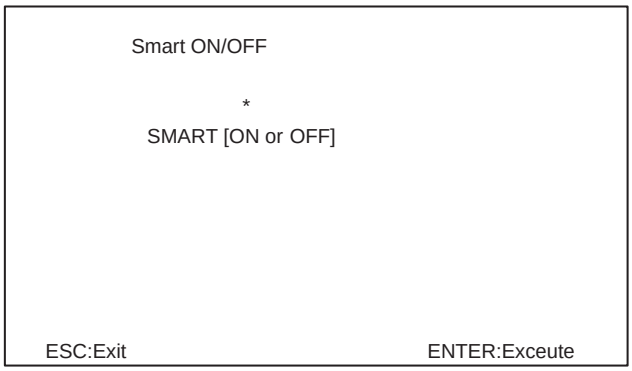
Select an item in each position indicated with "⊛"
(In the above display, the item surrounded by a ▭ is selected and the value surrounded by a ▭ is selected.)
The above display shows the contents of former 256 byte in the position of 000 LBA sector. Press [PGDN] key to display the latter 256 byte.
(When [PGDN] key is pressed on the above menu, the latter half of 256 byte in the position of 000 LBA sector is displayed.) Press PGDN key to display the former 256 byte.
When [ESC] key is pressed, the display returns to the menu display of the previous (1).

(8) Disk controller check test execution display



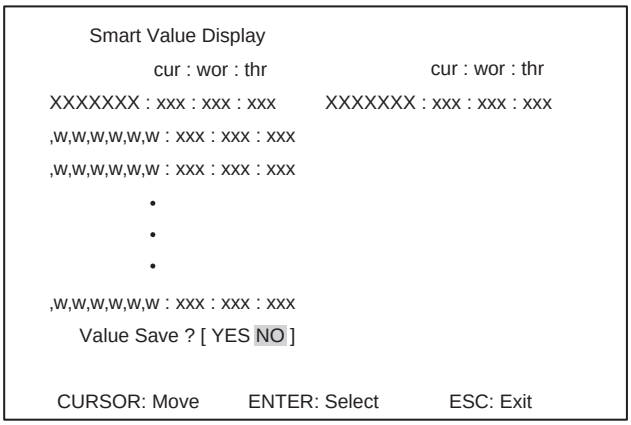
When the pass count is counted up and "OK!" is displayed at stop, the test is OK. (Note that it takes several seconds for 1 pass.)
When [SPACE] key is pressed during the test, the test is interrupted.
When [SPACE] key is pressed during interruption of the test, the test is resumed.
When [ESC] key is pressed during execution or interruption of the test, the test is terminated and the display returns to the menu display.

(9) Smart ON/OFF execution display



The status of the smart function is displayed in the position of "∗"
Press [ENTER] key to turn ON/OFF the smart function. When [ESC] key is pressed, the display returns to the menu display of the above (1).
Refer to HDD SMART.DOC.

(10) SMART value screen

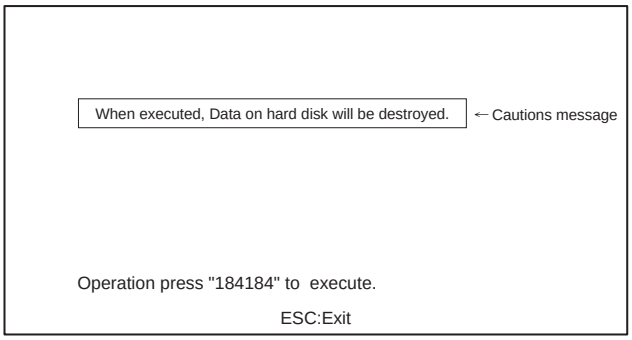

Smart Value Display
cur : wor : thr cur : wor : thr
XXXXXXX : xxx : xxx : xxx XXXXXXX : xxx : xxx : xxx
,w,w,w,w,w,w : xxx : xxx : xxx
,w,w,w,w,w,w : xxx : xxx : xxx
•
•
•
,w,w,w,w,w,w : xxx : xxx : xxx
Value Save ? [YES NO]
CURSOR: Move ENTER: Select ESC: Exit

SMART values stored in HDD are displayed.
Legends

XXXXXXX	:	The meaning of each SMART value is displayed. If an unknown value is read, the ID number is displayed.
cur	:	The current value of each item.
wor	:	The worst value of each item in the past.
thr	:	The lowest value at which each item operates normally.

With the above screen displayed, select YES using the cursor keys and then press ENTER to save the values displayed in the file.
You can exit the program without saving the values, by selecting NO and then pressing ENTER or ESC.

(11) Display before execution of write mode test



Before execution of write mode test
The caution message is displayed: [When executed, Data on hard disk will be destroyed.]
When "184184" is entered with the keys, the parameter input menu is displayed.

(12) Seek & write/read-verify test execution display

Similar to the above (5). However, the following content differs.
Test mode: ⬚ is displayed.

Data write - write
Data read - verify
is displayed.

(13) Write/read-verify test execution display

Similar to the above (11).

(14) Target sector write/read-verify test execution display

Similar to the above (6). However, the following content differs.

Test mode: ⬚ is displayed.

Data write - write
Data read - verify
is displayed.

(15) HD patch test execution display

Similar to the above (7). However, data in the HDD can be patched.
Data patch is made as follows:
Data in the HDD are changed on the display to patch.
(Shift the cursor to the item to be changed with [↑], [↓], [→], [←] keys, and enter data with [0] ~ [F] keys.)
Then press [ENTER] key, and select "Yes" in "Update? (Yes No)" and press [ENTER] key. (Shift the cursor with [←] key.) By this procedure, patch is executed.

4-3-6. Error contents

The following error contents are obtained directly from the HDD controller.

[Error codes and meanings]

Error code	Error message
0	OK!! (The process is normally completed.)
1	Drive not ready (HDD is not ready. STATUS REG bit6:0)
2	Bad contactor (HDD controller abnormality. diag status error STATUS REG bit5:1 or DIAG STATUS >=2)
3	Track 000 error (TRACK 000 cannot be found with RESTORE command. ERROR REG bit4:0)
4	Seek error (Seek error occurs. After execution of SEEK command, STATUS REG bit1 : 1)
5	ID not Found (ID field cannot be found. ERROR REG bit4:1)
6	Data Address Mark not Found (Data Address Mark cannot be found. ERROR REG bit0:1)
7	Bad Block Detect (Bad block mark is recorded in the ID field of the requested sector. ERROR REG bit7:1)
8	Uncorrectable Data Error (An uncorrectable read error occurs. ERROR REG bit6:1)
9	Other error (Other error STATUS REG bit0:1 and ERROR REG:0)
10	Time out error (Time out occurs when making an access to HDD.)
11	Compare error (Write data do not match with read data.)

4-4. 106 KEYBOARD

4-4-1. Outline

This test is used to check whether the full keyboard I/F section functions normally or not. This test checks contact state of the signal pins and key controller troubles.

4-4-2. Jig to be used

- 106 keyboard (OADG standard) x 1
- UP-X500 series main unit diag execution media x 1

4-4-3. Test item

The following item is checked with this test.

- 106 keyboard check

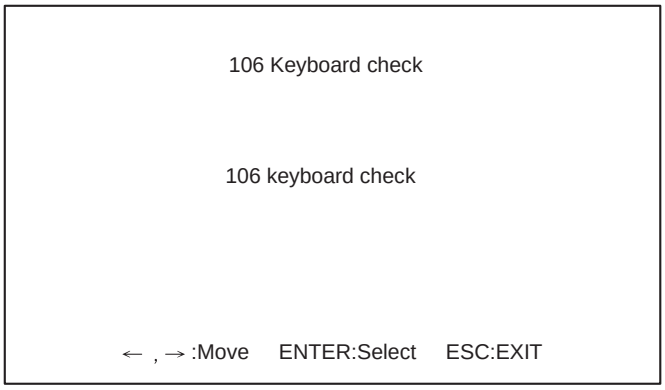
4-4-4. Test contents

(1) 106 keyboard check

Use 106 keyboard to execute 106 keyboard I/F test. This test checks contact state of the signal pins in the connector section. The layout of 106 keyboard is displayed on the display. When a key is pressed by the operator, the key position is indicated with ■ mark on the display. The operator must check that the pressed key position and the indicated position on the display are the same.
However, the following keys cannot be checked.
[PAUSE] [Print Screen]

4-4-5. Test menu

(1) 106 keyboard test menu display



On the above display, use [↑] and [↓] keys to select a test item. When [ENTER] key is pressed, the test is executed. When [ESC] key is pressed, the display returns to the initial menu.

(2) 106 keyboard check execution display

The layout of 106 keyboard is displayed.
When any key of 106 keyboard is pressed, the code of the pressed key is displayed.
KEY CODE: The key code value is displayed in HEX.

When [ESC] key of 106 keyboard is pressed twice continuously, the display returns to the menu of the above (1).

4-4-6. Error contents

(1) 106 keyboard check

- Parity error
  (This error occurs when the serial data from the keyboard is of even parity.)
- Key recognizer error
  (This error occurs when the entered key code cannot be recognized.)

4-5. VGA I/F & LCD

4-5-1. General

This test is used to check whether the VGA I/F section and the LCD panel function normally or not. Selection of aging/error stop/1 pass can be made. The test execution time is also displayed.

∗Since the VGA test is executed for all display area, when the VGA test item is selected, the display mode is switched to the all display mode.

4-5-2. Jig to be used

- UP-X500 series main unit diag execution media x 1

4-5-3. Test item

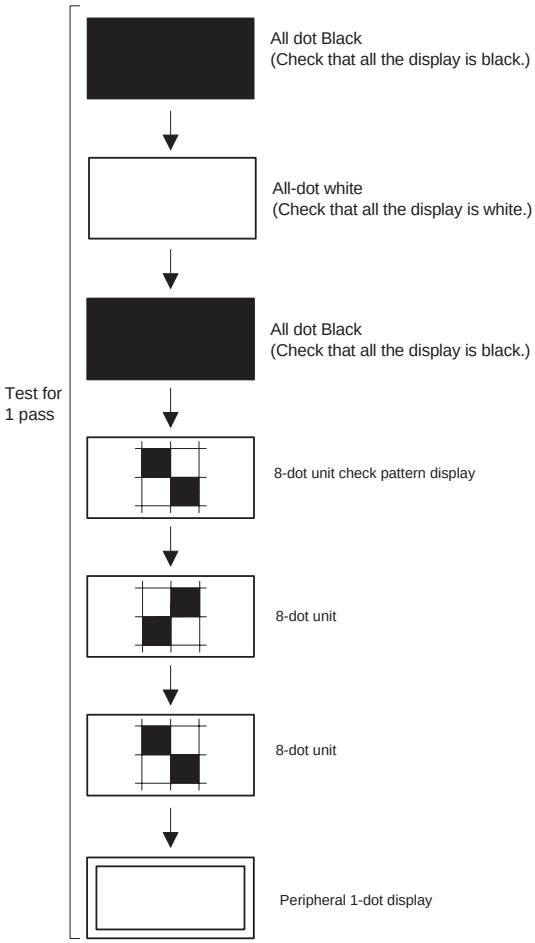
The purposes of this test are as follows:

- Test pattern display
- LCD backlight ON/OFF test
- LCD attribute test
- VRAM test
- Brightness test
- Error table

4-5-4. Test contents (for service repair)

(1) Test pattern display test

The LCD display test is executed in the following sequence:



(2) LCD backlight ON/OFF test

This test is used to check ON/OFF of the LCD backlight.
The test procedures are as follows:

Test for 1 pass
- Backlight ON
- ↓
- Backlight OFF

(3) LCD attribute test

This test is used to check 18-color display and 8-color reverse and blinking display.

(4) VRAM test

This test is used to execute the VRAM (1MB) memory verify test.

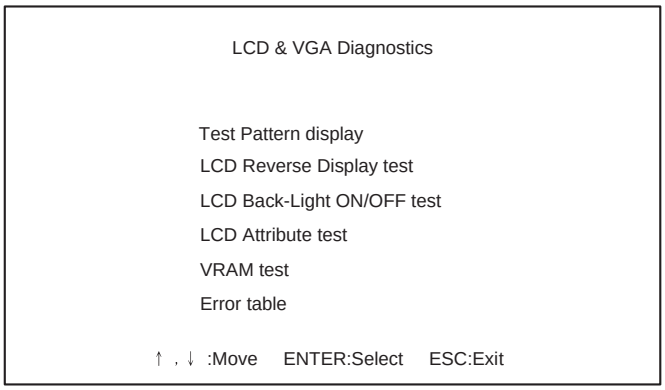
(5) LCD brightness test

(6) Error table

The errors occurred in the previous tests (1) ~ (5) are displayed for each test item.

4-5-5. Test menu

(1) VGA I/F & LCD test menu

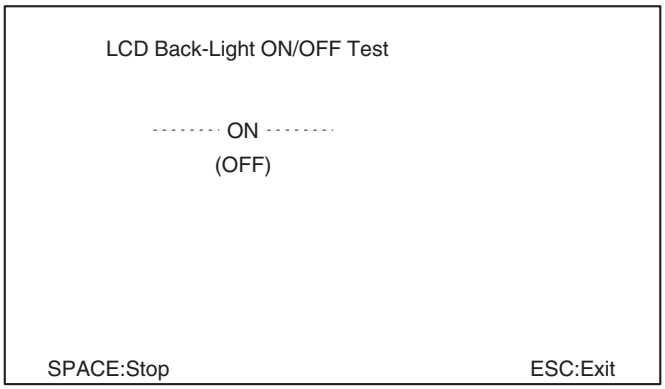


On the above display, use [↑] and [↓] keys to select a test item. When [ENTER] key is pressed, the test is executed. When [ESC] key is pressed, the display returns to the initial menu.

(2) Test pattern display test execution display

Refer to 5-5-4. (1).

(3) LCD backlight ON/OFF execution display



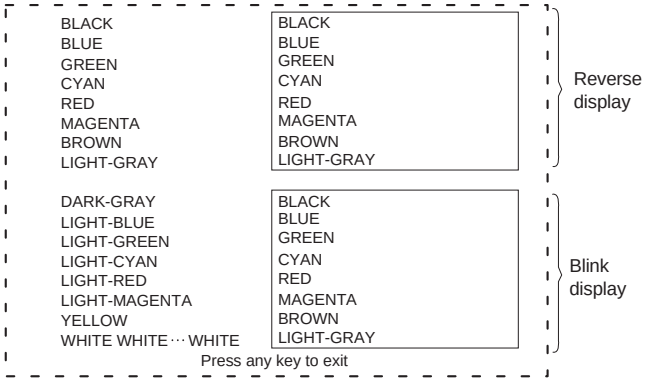
ON/OFF of the backlight is repeated in a certain frequency.

When [SPACE] key is pressed during this test, the test is interrupted.

When [SPACE] key is pressed during interruption, the test is resumed.

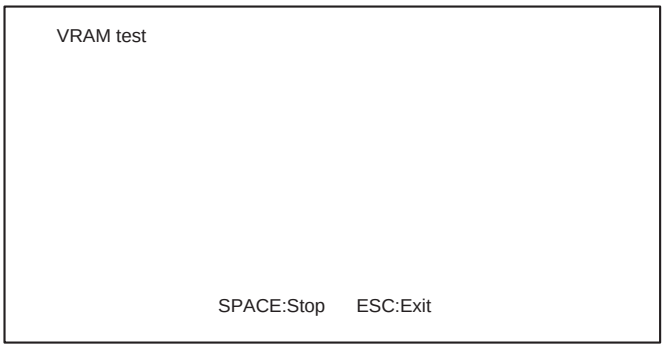
When [ESC] key is pressed, the test is terminated and the display returns to the initial menu.

(4) LCD attribute test execution display



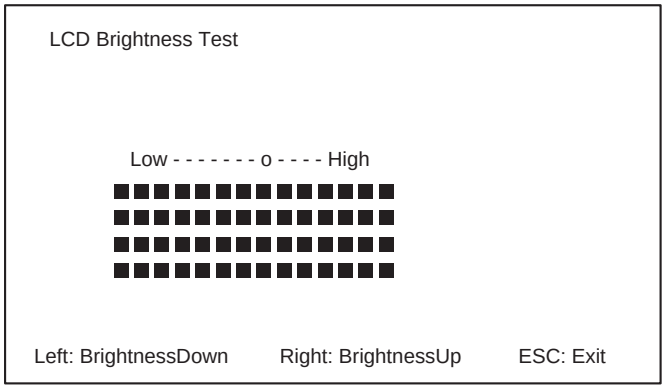
When any key is pressed, the test is terminated and the display returns to the menu of the above (1).

(5) VRAM test



Enter [SPACE] key to execute the VRAM verify test. (The display is colored in 12 colors.) Check the display and press any key to display the test result. When [ESC] key is pressed, the display returns to the menu display.

(6) LCD Brightness TEST screen



You can decrease the brightness by pressing the [←] key and increase it by pressing the [→] key.
The display will be returned to the menu screen by pressing the [ESC] key.

4-6. RTC

4-6-1. General

This test is used to check the RTC (Real Time Clock).
The following test items are checked:

- RTC test: Calendar time alarm setting test, calendar time alarm data read test, timer interruption test
- CMOS RAM test: Marching test, sequential write/read-verify test, RAM display test, RAM battery backup test
- Other functions: Error information display

4-6-2. Jig to be used

- UP-X500 series main unit diag execution media x 1

4-6-3. Test item

The purposes of this test are as follows:

Calendar & clock setup test
Calendar & clock read test
Timer interrupt test
CMOS RAM marching test
CMOS RAM sequential write/read-verify test
CMOS RAM display test
CMOS RAM battery backup test
Error table display

4-6-4. Test contents

(1) Calendar & clock setup test

This test is used to set data of calendar, clock, and alarm for the RTC.

Calendar : Year/Month/Day/Day of week
Clock : Hour/Minute/Second
Alarm : Hour/Minute/Second

(2) Calendar & clock real test

This test is used to read and display the calendar, clock, and alarm data of the RTC.

(3) Timer interrupt test

This test is used to execute the update test of the RTC calendar and clock.

The following timer interrupt items are also checked:

- Periodic interrupt
- Alarm interrupt
- Update ended interrupt

(4)CMOS RAM marching test

Caution: During execution of this test, do not turn off the power and do not reset the unit.

[Test condition setting]

- Error/Stop/Continue/1 pass

[Test contents]

The test pattern data are written into the area (Index address 0Eh - 7Eh) of the CMOS RAM, and the read/verify test is executed.
After writing the data, the read/verify test is executed only once.
There are four kinds of data pattern to be written: 00h, FFh, 55h, and AAh.
Writing the above four patterns form 1 pass.
Before execution of the test, save all the data in the CMOS RAM. After execution of the test, restore the data to the CMOS RAM.

(5) CMOS RAM sequential write/read-verify test

Caution: During execution of this test, do not turn off the power and do not reset the unit.

[Test condition setting]

- Error/Stop/Continue/1 pass

[Test contents]

The test pattern data are written into the area (Index address 0Eh - 7Eh) of the CMOS RAM, and the read/verify test is executed.
After writing the data, the read/verify test is executed twice.
Leave an interval (1 sec) between the first check and the second check.
There are following patterns of data to be written: (Data of 1 pass)

Test pattern (I) 00h, 01h, 02h, 04h . . . 40h, 80h (9 patterns)
Test pattern (II) FFh, FEh, FDh, FBh . . . BFh, 7Fn (9 patterns)
Test pattern (III) 00h, 01h, 02h, 03h . . . FEh, FEh (256 patterns)

Before execution of the test, save all the data in the RAM. After execution of the test, restore the data to the RAM.

(6) CMOS RAM display test

All the data in all the areas (Index address: 00h - 7Fh) of the CMOS RAM are displayed in HEX.

(7) CMOS TRAM battery backup test

This test is used to check the RTC control register Bit 7 (VRT bit), and check changes in the CMOS RAM setting data and the data backup battery.

(8) Error table display

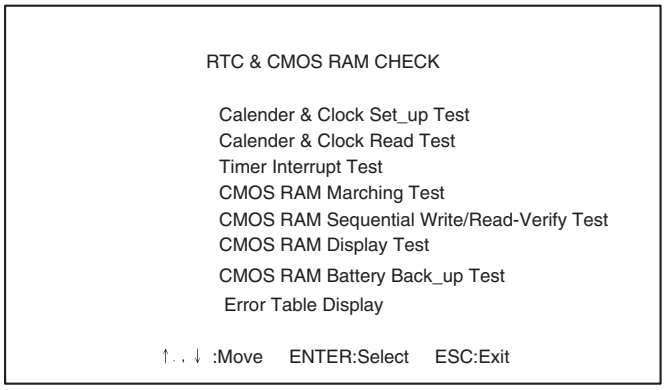
For service repair, the error information is saved in the DRAM, and data saved in the DRAM are edited and displayed. When no error is found in the previous tests (1) ~ (7), "OK" or "NO ERROR" is displayed.

(9) Other supplementary note

In the marching test and the write/read-verify test, max. 20 errors are recorded as the error information from selection of the function in chronological order. No more error is recorded.

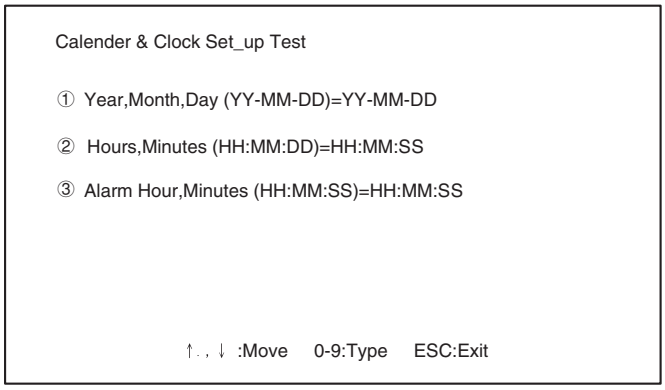
4-6-5. Test menu

(1) RTC test menu display


RTC & CMOS RAM CHECK
Calender & Clock Set_up Test
Calender & Clock Read Test
Timer Interrupt Test
CMOS RAM Marching Test
CMOS RAM Sequential Write/Read-Verify Test
CMOS RAM Display Test
CMOS RAM Battery Back_up Test
Error Table Display
↑ , ↓ :Move ENTER:Select ESC:Exit

On the above menu, use [↑] and [↓] keys to select a test item. Press [ENTER] key to execute the test. When [ESC] key is pressed, the display returns to the initial menu.

(2) Calendar & clock setup test execution display


Calender & Clock Set_up Test
① Year,Month,Day (YY-MM-DD)=YY-MM-DD
② Hours,Minutes (HH:MM:DD)=HH:MM:SS
③ Alarm Hour,Minutes (HH:MM:SS)=HH:MM:SS
↑ , ↓ :Move 0-9:Type ESC:Exit

Enter the item umbers sequentially from the above with 10-key (0 ~ 9). After entering all the three items (use [→] key to skip) , select "OK" (use [←] key) in "CONFIRM (OK NO)" and press [ENTER] key. The data of the three items are set in the CMOS RAM.

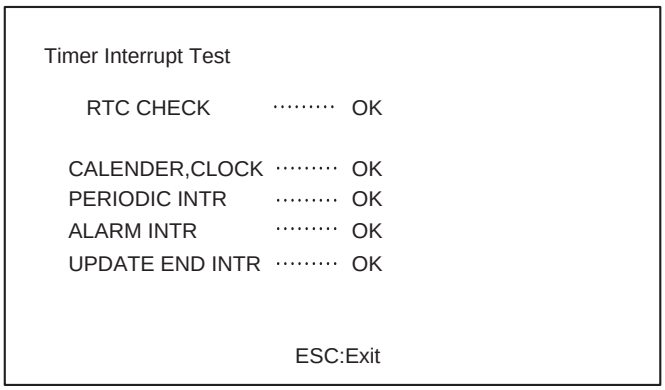
① YY-MM-DD . . .Enter Year - Month - Day.

②, ③ HH-MM-SS . . . Enter Hour - Minute - Second.

(3) Calendar & clock read test execution display

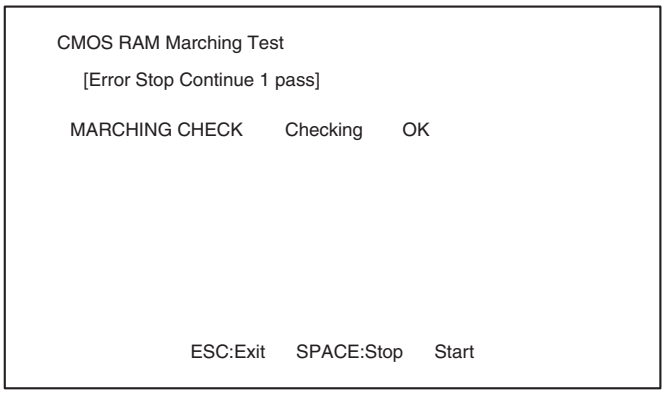
The same display as the above (2) is shown.
Check that the data of "Second" in the item ② is counted up every second. If so, the test is OK.

(4) Timer internet test execution display



When "OK" is displayed for all the five items, the test is OK.

(5) CMOS RAM marching test execution display

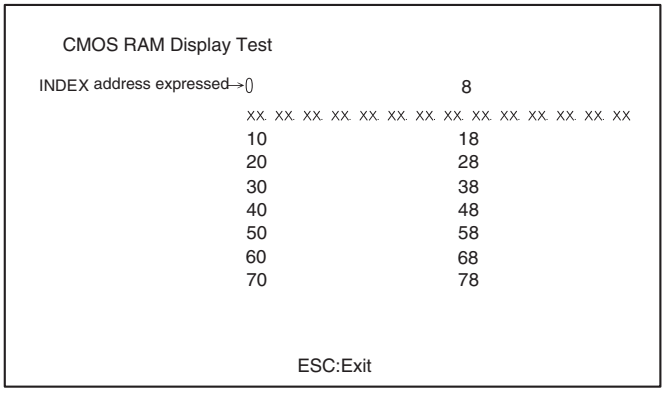


Press [SPACE] key when [Checking] on the above display flashes. If [OK] is displayed, the test is OK.

(6) CMOS RAM sequential write/read-verify test

Similar to the above (5).

(7) CMOS RAM display test execution display



The data in all the areas of the CMOS RAM are displayed in HEX.

[XX: Data on the CMOS RAM]

(8) CMOS RAM battery backup test execution display

```
CMOS RAM Battery Back_up Test

① [Pre_check Check]

  BATTERY CHECK.....Checking  Pre_Check end


Machine power off please!!



                ESC:Exit
```

Select the item ① in [Pre_check] and press [ENTER] key, and the former half of the check is executed and "Pre_Check end" is displayed.

Turn off the power of the unit, and turn on to boot the same test.

```
② [ Pre_check CHECK]
  BATTERY CHECK     OK




            Press any key to Exit
```

Select the item ② in [Check] and press [ENTER] key, and the last half of the check is executed. If "OK" is displayed, the test is OK.

4-6-6. Error contents

Error code	Error message
0	OK!! (The process is normally completed.)
1	Readed calendar data dose not expect calendar data. (Read calendar data does not match the expected calendar data.)
2	Readed clock data does not expect clock data. (Read clock data does not match the expected clock data.)
3	Periodic interrupt hasn't happened. (Periodic interrupt hasn't happened.)
4	Alarm interrupt hasn't happened. (Alarm interrupt hasn't happened.)
5	Update ended interrupt hasn't happened. (Update ended interrupt hasn't happened.)
6	CMOS RAM a writed data hasn't coincide with a READED data. (Data written into the RAM does not match check data.)
8	RTC battery is badness. (The CMOS backup battery is defective.)

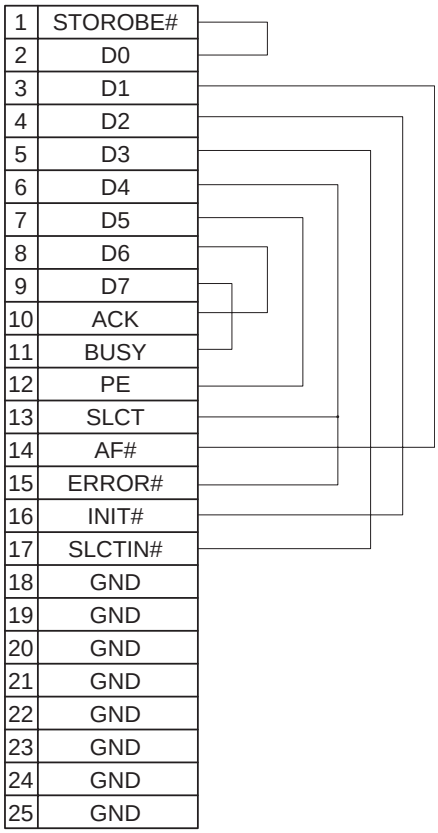
4-7. CENTRO I/F (AT)

4-7-1. Outline

This test is used to check whether the Centro I/F section functions normally or not. This test checks contact of the signal pins and the Centro I/F troubles. Selection of aging/error stop/1 pass can be made for each test item, and the test time is displayed.

4-7-2. Jig to be used

• Centro shorter (UPOG-2366BHZZ)



1	STOROBE#
2	D0
3	D1
4	D2
5	D3
6	D4
7	D5
8	D6
9	D7
10	ACK
11	BUSY
12	PE
13	SLCT
14	AF#
15	ERROR#
16	INIT#
17	SLCTIN#
18	GND
19	GND
20	GND
21	GND
22	GND
23	GND
24	GND
25	GND

• UP-X500 series main unit diag execution media

4-7-3. Test items

The purposes of this test are as follows:

- Signal line test (without loop-back connector)
- Signal line test (with loop-back connector)
- Sense printer status check
- All characters print check
- Dummy printer test (with dummy printer)
- Error table

4-7-4. test contents

(1) Signal line test (without loop-back connector)

The signal test is executed without a shorter (loop-back connector) to check for connection of signal lines.
Change the following signals and check that the other signals are not affected or not.
Strobe, Autofeed, Init, SLCTIN, ERROR, SLCT, PE, ACK, Busy

(2) Signal line test (with loop-back connector)

Use a shorter (loop-back connector) to execute loop-back test of the signals to check Enable/Disable control of each signal line is possible or not.
Change the following signals and check changes in the signals.
Strobe, Autofeed, Init, SLCTIN, ERROR, SLCT, PE, ACK, Busy

(3) Sense printer status check

The printer status is read to check the following six kinds of status and the status is displayed.

Bsy : Printer Busy signal level

Ack : Level of handshake signal between the printer and the main unit

Pe : Paper is loaded.

Sel : The printer is on-line.

Ioe : The printer self-test is completed normally.

Toe : The printer I/F functions properly.

When the check result is normal, an asterisk (∗) is displayed above each item.

(4) All characters print check

Note: This check can be executed only when all the five items of the sense printer status check are marked with an asterisk (∗). One-byte characters (printer character code 20H - 7FH) which can be printed by the printer are printed. Visually check the printed characters for any abnormality. If there is no abnormality, the test is OK.

(5) Dummy printer test (with dummy printer)

∗Since this test is an object for debugging, it is not used by the service manual.

This test uses the printer dummy checker to execute the following four tests, checking that the signal pins function normally.

① Printer status check
The printer status is checked.

② Data bus check 1
Output the data 00H - FFh to the data bus (PD0 - 7) and check the data inside the checker.

③ Data bus check 2
Similarly to the above, output the data 01H, 02H, 04H, 08H, 10H, 20H, 40H, and 80H to check.

④ Control line check
The signals outputted from the checker are checked. (SELECT, PE, FAULT)

4-7-5. Test display

(1) Centro I/F (AT) test menu display

```
Printer Diagnostics

Internal Port=0,External Port=1

   Signal Line Test (without loopback connector)
   Signal Line Test (with loopback connector)
   Sense printer status check
   All characters print check
   Dummy Printer test(with dummy printer)
   Error table

↑, ↓ :Move    ENTER:Select    ESC:Exit
```

On the above menu, use [↑] and [↓] keys to select a test item. Press [ENTER] key to execute the test. When [ESC] key is pressed, the display returns to the initial menu.

(2) Signal line test (without loop-back connector) execution display

```
Signal Line Test (without loopback connector)

☆ [Error stop Continue 1 Pass]
   Line Check....OK
 Output Line.....
 Input Line.....
                          D0-STRPBE      Line Error =00000
                          D1-AUTO FEED   Line Error =00000
                          D2-INIT        Line Error =00000
                          D3-SLCT IN     Line Error =00000
                          D4-ERROR       Line Error =00000
                          D5-PE          Line Error =00000
                          D6-ACK         Line Error =00000
                          D7-BUSY        Line Error =00000

TIME tt:mm:ss          PACC COUNT =00000
CURSOR:Move            ENTER:Select          ESC:Exit
```

Select an item in each position indicated with "☆"
(In the above display, the item surrounded by a ▭ is selected and the value surrounded by a ▭ is selected.)
When [SPACE] key is pressed during execution of the test, the test is interrupted.
When [SPACE] key is pressed during execution or interruption of the test, the test is terminated and the display returns to the menu display (1).
When "OK" is displayed for two tests (Output, Input), the test is OK.

(3) Signal line test (with loop-back connector) execution display

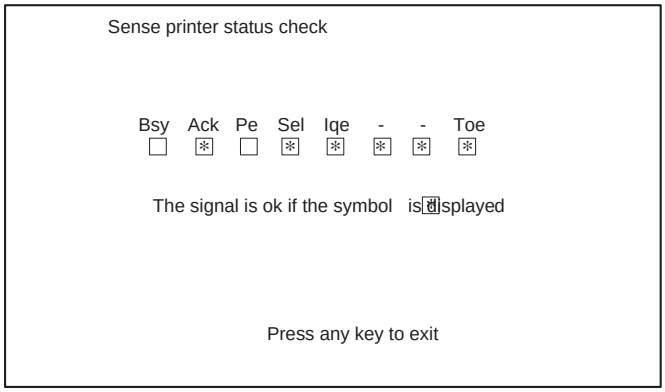
```
Signal Line Test (with loopback connector)

☆ [Error stop Continue 1 Pass]
   Line Check....OK
 Output Line.....
 Input Line.....
                          D0-STRPBE      Line Error =00000
                          D1-AUTO FEED   Line Error =00000
                          D2-INIT        Line Error =00000
                          D3-SLCT IN     Line Error =00000
                          D4-ERROR       Line Error =00000
                          D5-PE          Line Error =00000
                          D6-ACK         Line Error =00000
                          D7-BUSY        Line Error =00000

TIME tt:mm:ss          PACC COUNT =00000
CURSOR:Move            ENTER:Select          ESC:Exit
```

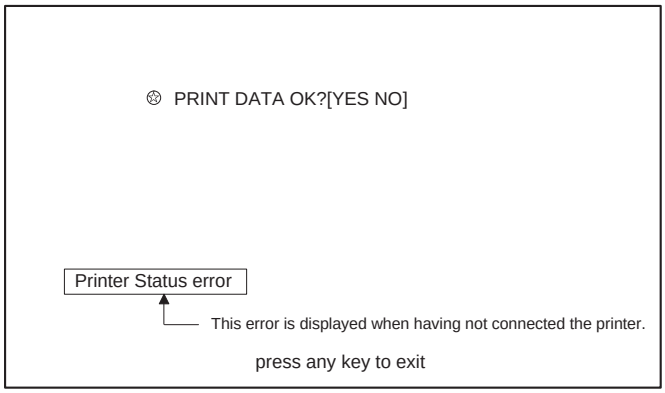
Select an item in each position indicated with "☆"
(In the above display, the item surrounded by a ▭ is selected and the value surrounded by a ▭ is selected.)
When [SPACE] key is pressed during execution of the test, the test is interrupted.
When [SPACE] key is pressed during execution or interruption of the test, the test is terminated and the display returns to the menu display (1).
When "OK" is displayed for two tests (Output, Input), the test is OK.

(4) Sense printer status check execution display



When an asterisk (*) is displayed for all the positions, the test is OK. (The above display shows the status without connection of the printer.) When any key is pressed, the display returns to the menu display (1).

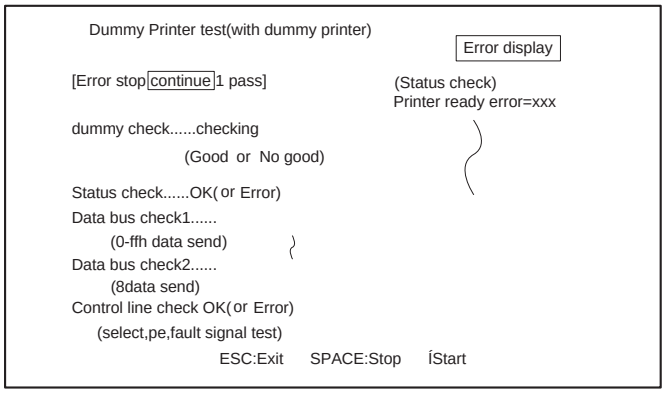
(5) All character print check execution display


PRINT DATA OK?[YES NO]
Printer Status error
This error is displayed when having not connected the printer.
press any key to exit

If there is no abnormality on the printed characters marked with , the test is OK. Select [Yes]. (Use the cursor [←] key, and press [ENTER] key.)

(6) Dummy printer test execution display

*Since this test is an object for debugging, it is not used by the service manual.



Select the item marked with and execute the test.
(Use the cursor keys [←] and [→], and press [ENTER] key.)
During execution of the test, "Checking" flashes and the check results of the four checks are displayed. When "OK" is displayed, the test is OK.
When [SPACE] key is pressed during execution of the test, "Checking" turns to "good!!" or "No good!!" and the test is interrupted.
When [SPACE] key is pressed during interruption of the test, "Checking" flashes and the test is resumed.
When [ESC] key is pressed, the test is terminated and the display returns to the menu display (1).

4-7-6. Error contents

(1) Dummy printer test (with dummy printer)

(Status check)

- Printer ready error
  (The printer status is read to find that the printer is in use.)

(Data bus check 1)

- Printer busy error
  (The printer becomes busy during execution of printer data pass test 1.)
- ACK interrupt error
  (An interruption by ACK is not made during execution of printer data pass test 1 and the unit is not ready for reception.)

(Data bus check 2)

- Printer busy error
  (The printer goes into busy during execution of printer data pass test 2.)
- ACK interrupt error
  (An interruption by ACK is not made during execution of printer data pass test 2 and the unit is not ready for reception.)

(Control line check)

- Select signal error
  (When SLCTIN signal is changed to HIGH/LOW, the SELECT signal is not changed.)
- Error signal error
  (When INIT signal is changed to HIGH/LOW, the ERROR signal is not changed.)
- Paper empty signal error
  (When AFD signal is changed to HIGH/LOW, the PE signal is not changed.)

(2) All characters print check

- Print data error
  (After completion of printing of the all characters print check, the operator's operation is judged as an error.)
- Print status error
  (Before execution of printing, the printer status is read and an error is found.)

(3) Signal line test

- /STROBE error
  /STROBE output signal error
- /AUTO FEED error
  /AUTO FEED output signal error
- /INIT error
  /INITI output signal error
- /SLCK IN error
  /SLCT IN output signal error
- /ERROR or SLCT error
  /ERROR signal error or SLCT output signal error
- /PE error
  /PE input signal error
- /ACK error
  /ACK input signal error
- /BUSY error
  Busy input signal error

4-8. LINE DISPLAY I/F

4-8-1. Outline

The customer line display (UP-P20DP, UP-I20DP) is connected to execute the display test.

4-8-2. Jig to be used

UP-X500 series main unit diag execution media x 1

UP-P20DP, UP-I20DP (Customer line display) x 1

4-8-3. Test item

- The purposes of this test are as follows:
- Test pattern display test

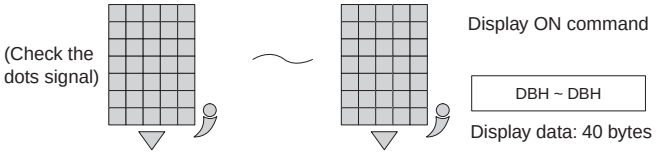
Error table

4-8-4. Test contents

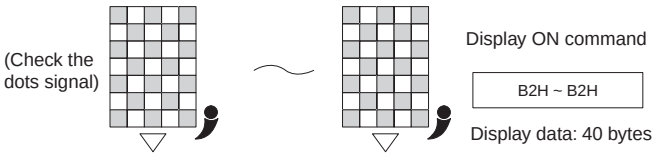
(1) Test pattern display test

The following test patterns are displayed on the line display sequentially. Check that each test pattern is displayed properly.

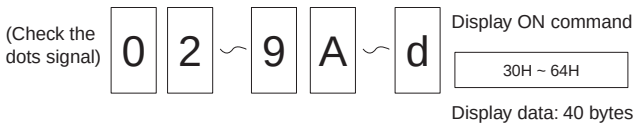
Pattern 1: All segments display



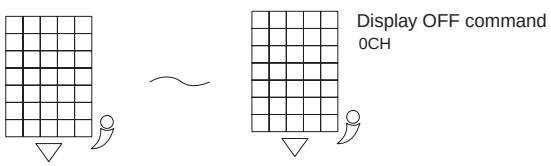
Pattern 2: Check pattern display



Pattern 3: Numerals (1 - 9), alphabet (A - G) display



Pattern 4: All segments delete

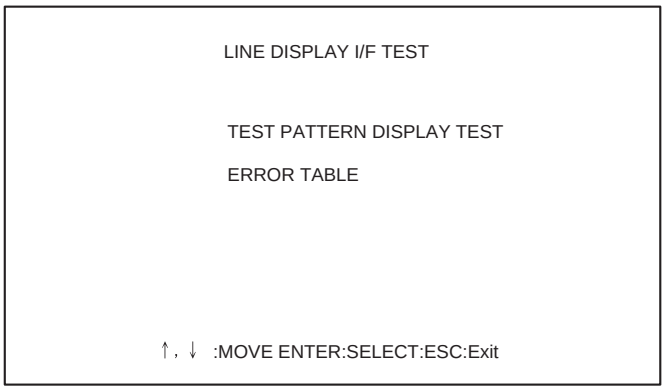


(2) Error table

The error content logged in the above (1).

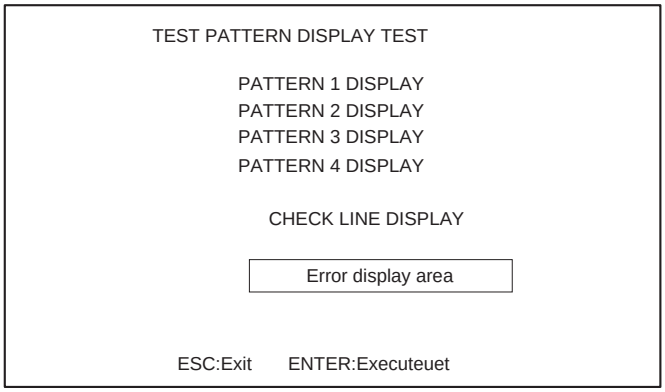
4-8-5. Test display

(1) Line display I/F test menu display



On the above menu, use [↑] and [↓] keys to select a test item. Press [ENTER] key to execute the test. When [ESC] key is pressed, the display returns to the initial menu.

(2) Test pattern display execution display



The pattern No. line displayed on the line display is reversely displayed.

When pattern 1 is displayed, the first line is reversely displayed.

Every time when [ENTER] key is pressed, the next pattern is displayed.

The sequence returns to pattern 1 from pattern 4.
When [ESC] key is pressed, the display returns to the above menu display (1).

4-8-6. Error contents

(1) Send time out

Data cannot be written into PCP3 send register.

(2) Receive time out

PCP3 does not send a response.

(3) Response error

Command response error

4-9. Drawer I/F

4-9-1. General

The drawer magnet is connected to execute signal check.

4-9-2. Jig to be used

- UP-X500 main unit diag execution media x 1
- Drawer magnet

4-9-3. Test contents

The purposes of this test are as follows:

- Drawer open test (Channel 1)
- Drawer open test (Channel 2)
- Drawer sense test

(1) Drawer open test (Channel 1)

In this test, the drawer magnet channel 1 (drawer open) signal is turned on.

(2) Drawer open test (Channel 2)

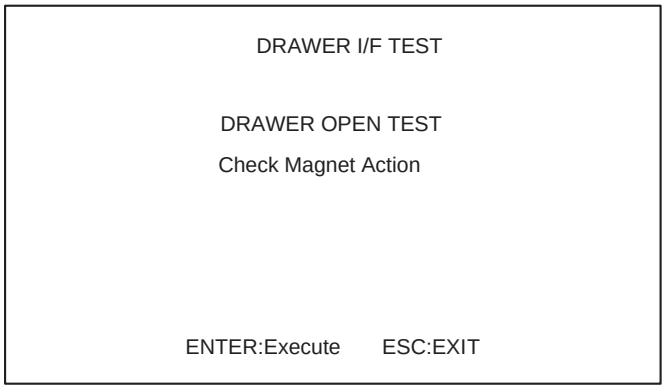
In this test, the drawer magnet channel 2 (drawer open) signal is turned on.

(3) Drawer sense test

This test senses open state of the drawer magnet channel 1 and channel 2.

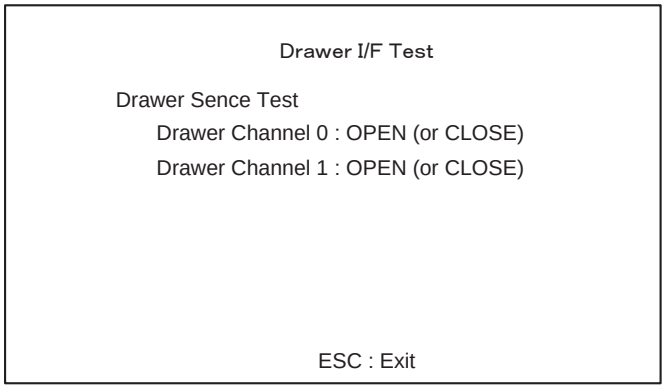
4-9-4. Test display

(1) Drawer I/F test channel 1 & 2 menu display



On the above menu, use [↑] and [↓] keys to select a test item. Press [ENTER] key to execute the test. When [ESC] key is pressed, the display returns to the initial menu.

(2) Drawer Sense TEST



The operating status of each drawer channel is displayed.
You can return to the menu screen by pressing the [ESC] key.

4-9-5. Error contents

(1) Drawer open test

(1) Send time out
Data cannot be written into PCP3 send register.

(2) Receive time out
PCP3 does not send a response.

(3) Response error
Command response error

4-10. Buzzer

4-10-1. Option

The buzzer rings.

4-10-2. Jig to be used

• UP-X500 series main unit diag execution media x 1

4-10-3. Test items

The purposes of this test are as follows:

- Buzzer ring test
- Error table

4-10-4. Test contents

(1) Buzzer ring test

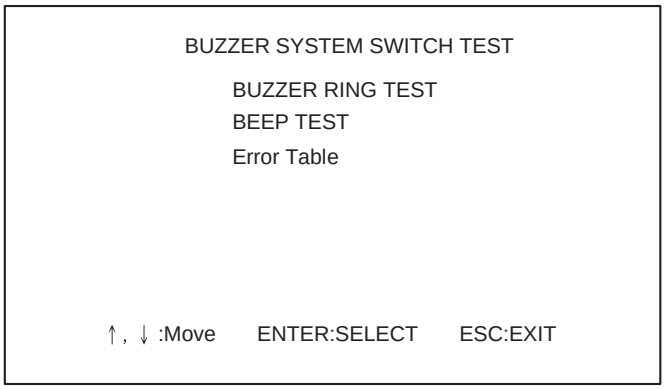
This test checks that the buzzer rings or not.
The operator checks that the buzzer rings.
If checked, the test is OK. Also check that the buzzer sound volume functions properly.

(2) Error table

The error content logged in the above (1) is displayed.

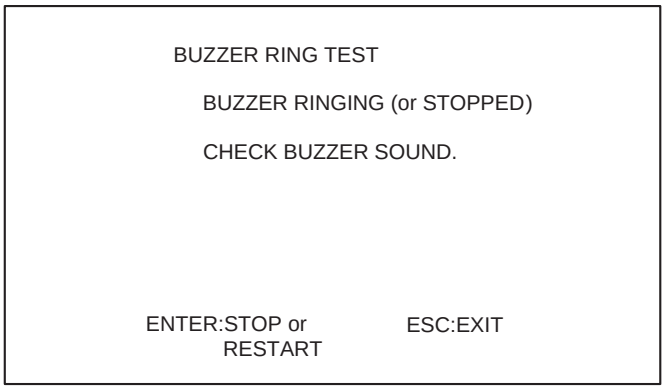
4-10-5. Test display

(1) Buzzer test menu display



On the above menu, use [↑] and [↓] keys to select a test item. Press [ENTER] key to execute the test. When [ESC] key is pressed, the display returns to the initial menu.

(2) Buzzer ring test execution display



Check that the buzzer rings.

4-10-6. Error contents

(1) Buzzer ring test

① Buzzer error (Related to the product check and the main PWB check.)
After execution of the test, the operator enters the test result as "Error" or the operator interrupts the test during execution of the test.

4-11. COM (SERIAL I/F)

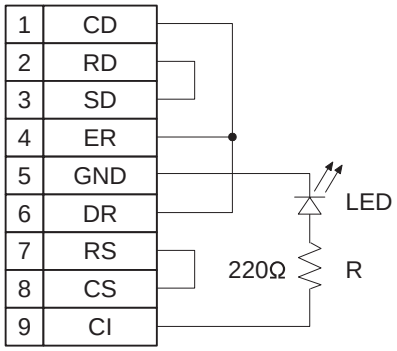
4-11-1. General

This test checks that the serial I/F section on the AT board functions normally or not.

4-11-2. Jig to be used

- UP-X500 series main unit diag execution media
- AT SIO shorter (Exclusively for UP-X500 series)

Wiring diagram



- Scanner UP-H60SC

4-11-3. Test contents

- The purposes of this test are as follows:
- Signal line test (with loopback connector)
- Signal line test (without loopback connector)
- Parameter function test (with loopback connector)
- Character transport test (with loopback connector)
- Signal line I/O test
- +5V out
- Hand scanner read test
- Error table

4-11-4. Test contents

(1) Signal line test (with loopback connector)

Use a shorter (loopback connector) to execute the loopback test of data, checking for contact of the signal pins.

① SD a RD line test
The following tests 1 - 3 are executed.

1. Data of 256 byte from 00h to FFh are sent at 9600bps, and the received data are compared with the sent data.
2. Parity-added data are sent in 10 byte (00h to 0Ah) at 9600bps, and the received data are compared with the sent data.
3. Produce an overrun error intentionally and detect the error.

② RTS 3 CTS line test
After changing the output control signal RTS, check that the input control signal CTS is changed or not.

RTS ON → CTS ON

RTS OFF → CTS OFF

③ DTR a DSR line test
After changing the output control signal DTR, check that the input control signals DSR and CD are changed or not.

DTR ON → DSR ON

DTR OFF → DSR OFF

Execute the above tests ①, ②, and ③ sequentially. Completion of the above tests forms 1 pass.

(2) Signal line test (without loopback connector)

The loopback test of data is executed without using the shorter (loopback connector) to check that the signal pins other than the connectors on the PWB are not in contact.

① SD → RD line test
The following tests 1 ~ 2 are executed.

1. Data of 256 byte from 00h to FFh are sent at 9600bps, and the received data are compared with the sent data.
2. Parity-added data are sent in 10 byte (00h to 0Ah) at 9600bps, and check that no data are received.

② RTS a CTS line test
After changing the output control signal RTS, check that the input control signal CTS is not changed.

RTS ON a CTS not changed

RTS OFF a CTS not changed

③ DTR a DSR line test
After changing the output control signal DTR, check that the input control signal DSRCD is not changed.

DTR ON a DSR, CD not changed

DTR OFF a DSR, CD not changed

Execute the above tests ①, ②, and ③ sequentially. Completion of the above tests forms 1 pass.

(3) Parameter function test (with loopback connector)

This test is used to check send/receive operations in all possible combinations.
00h - 7Fh when the word length of send/receive data is 7 bit.
00h - FFh when the word length of send/receive data is 8 bit.
SD → RD line test

- Baud rate : 9600, 4800, 1200, 600, 300, 150, 110
- Parity : none, even, odd
- Stop bit : 1 bit, 2 bit
- Word length : 8 bit, 7 bit

When send/receive operations in all the possible combinations are completed, this test is terminated.

(4) Character transport test (with loopback connector)

Character data entered from the keyboard are sent, and the send data are received through the shorter (loopback connector) to check send/receive operations.
Send data and receive data are displayed on the display.

(5) Signal line I/O test

The RTS line and the DTR line are changed to HIGH or LOW to check that the signal level is changed accordingly. The CTS, DSR, and CD lines are also displayed.
Selection of [HIGH, LOW, NO CHANGE] is available. When set to HIGH, the output level becomes high. When set to LOW, the output level becomes low. When set to NO CHANGE, the output level is not changed.

(6) +5V out

+5V output is provided to the COM port.

(7) Hand scanner read test

The hand scanner is used to read bar codes and display in ASCII codes and hex codes.

(8) Error table

The error content logged in the previous (1) ~ (7).

4-11-5. Test display

(1) COM (Serial I/F) test menu display

```
                    Serial I/F check
        [COM1 COM2]
        Signal Line Test          (with loop back connector)
        Signal Line Test          (without loop back connector)
        Parameter Function Test   (with loop back connector)
        Character Transport Test  (with loop back connector)
        Signal Line I/O Test
        +5V Out
        Hand Scanner Read Test
        Error Table
        CUSOR:Move      ENTER:Select      ESC:Exit
```

Select a channel to be tested with [←] and [→] keys and press [ENTER] key. Select a test item with [↑] and [↓] keys and press [ENTER] key to execute the test.
When [ESC] key is pressed, the display returns to the initial menu display.

(2) Signal line test (with loopback connector)

```
    Signal Line Test (with loopback connector)
    [COM1]
◆   [Error stop Continue 1 Pass]
    Line check....Checking
    SD - RD    line...OK!!                  Transmit register full   =00000
    RTS-CTS-RI line...OK!!                  Framing error            =00000
    DTR-DSR    line...OK!!                  Parity error             =00000
                                            Over run error           =00000
                                            Break detect             =00000
                                            Compare error            =00000
                                            RTS-CTS-RI Line error    =00000
                                            DTR-DSR-CD Line error    =00000
                                            Not Over run error       =00000
                                            Not recieve error        =00000
          CUSOR:Move      ENTER:Select      ESC:Exit
```

Select an item in the position marked with ◆. (The item surrounded with a ▭ is selected on the above display.)
When [SPACE] key is pressed during execution of the test, the test is interrupted.
When [ESC] key is pressed during execution or interruption of the test, the test is terminated and the display returns to the above menu display (1).

(3) Signal line test (without loopback connector) execution display

```
    Signal Line Test (without loopback connector)
    [COM1]
◆   [Error stop Continue 1 Pass]
    Line check....Checking
    SD - RD    line...OK!!                  Transmit register full   =00000
    RTS-CTS-RI line...OK!!                  Framing error            =00000
    DTR-DSR-CD line...OK!!                  Parity error             =00000
                                            Over run error           =00000
                                            Break detect             =00000
                                            Compare error            =00000
                                            RTS-CTS-RI Line error    =00000
                                            DTR-DSR-CD Line error    =00000

                CUSOR:Move      ENTER:Select      ESC:Exit
```

Select an item in the position marked with ◆. (The item surrounded with a ▭ is selected on the above display.)
When [SPACE] key is pressed during execution of the test, the test is interrupted.
When [ESC] key is pressed during execution or interruption of the test, the test is terminated and the display returns to the above menu display (1).

(4) Parameter function test (without loopback connector) execution display

```
    Parameter Function Test (without loopback connector)
    [COM1]
◆     ERROR[stop Continue ]
      Parameter check....Checking
    Baud rate          9600 4800 2400 1200 600 300 150 110
    Parity type        NONE ODD NONE EVEN
    Stop bits          1  2
    Data length        7bits 8bits
    Transmit register full      =00000
    Framing error               =00000
    Parity error                =00000
    Over run error              =00000
    Break detect                =00000
    Compare error               =00000
    Not recieve error           =00000
          CUSOR:Move      ENTER:Select      ESC:Exit
```

Select an item in the position marked with ◆. (The item surrounded with a ▭ is selected on the above display.)
When [SPACE] key is pressed during execution of the test, the test is interrupted.
When [ESC] key is pressed during execution or interruption of the test, the test is terminated and the display returns to the above menu display (1).

(5) Character transport test (without loopback connector) execution display

```
Character Transport Test (without loopback connector)

    [COM1]

    Sended charactors :

    Received charactors
```

When data to be sent are entered from the keyboard and RETURN key is pressed, the data are sent from the selected channel.
When the send data are the same as the receive data, the test is OK.
When [ESC] key is pressed, the test is terminated and the display returns to the above menu display (1).

(6) Signal line I/O test execution display

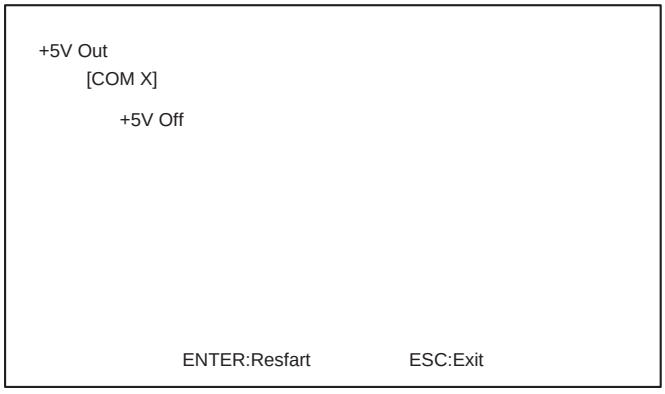
```
Signal Line I/O Test
      [COM1]

◆   RTS LINE [HIGH LOW NOCHANGE]
◆   DTR LINE [HIGH LOW NOCHANGE]
    CTS LINE LOW
    DSR LINE LOW
    CD LINE LOW
    RI LINE LOW

          CUSOR:Move      ENTER:Select      ESC:Exit
```

Select an item in the position marked with ◆. (The item surrounded with a ▭ is selected on the above display.)

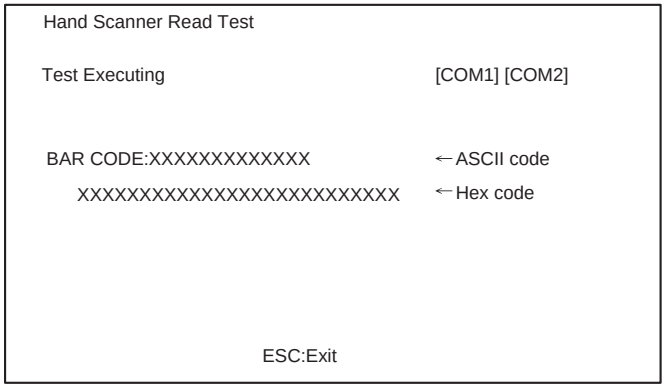
(7) +5V out execution display



When [ENTER] key is pressed, +5V power is supplied to the selected COM port.

When [ENTER] key is pressed again, +5V power is cut off.

(8) Hand scanner read test execution display



When [ESC] key is pressed, the test is terminated and the display returns to the above menu display (1).

4-11-6. Error contents

Communication test

(1) SD-RD LINE TRANSMIT REGISTER FULL
The transmit register is full and unable to send data.

(2) SD-RD LINE FRAMING ERROR
There is no effective stop bit in the receive character.

(3) SD-RD LINE PARITY ERROR
The receive character has an even or odd parity different from one selected in the parity select.

(4) SD-RD LINE OVERRUN ERROR
Before reading data from the receive buffer register, the next character is received and the previous character is destroyed.

(5) SD-RD LINE BREAK DETECT ERROR
The receive data input is held at the space state for a longer time than the transfer time of all the words (start bit + parity bit + stop bit).

(6) SD-RD LINE COMPARE ERROR
The send data do not match the receive data.

(7) SD-RD LINE NOT RECEIVE ERROR
Data are sent but not received.

(8) SD-RD LINE NOT OVERRUN ERROR
Before reading data from the receive buffer register, the next character is transferred to the receive buffer, but an overrun error does not occur.

(9) RTS-CTS LINE ERROR
In the signal line test (with loopback connector), when RTS is driven to active, CTS does not become active.
In the signal line test (without loopback connector), when RTS is driven to active, CTS becomes active.

(10)DTR-DSR LINE ERROR
In the signal line test (with loopback connector), when DTR is driven to active, DSR does not become active.
In the signal line test (without loopback connector), when DTR is driven to active, DSR becomes active.

(11)+5V OUT Test error
+5V output command is not received.

Hand scanner test

(1) Receive data not ready
Before receiving the bar code terminate code (0Dh), data receive is terminated.

(2) Overrun error
An overrun error occurs in receive data.

(3) Parity error
A parity error occurs in receive data.

(4) Framing error
A framing error occurs in receive data.

(5) Scanner not connected
The scanner is not connected.

(6) Scanner is bad
CTS does not turn on for DSR ON.

(7) Receive data error
bar code data format error

4-12. LAN TEST

4-12-1. Outline

This test is used to check and set the MAC address set for the LAN controller.

4-12-2. Jig to be used

- UP-X500 main unit diag execution media

4-12-3. Test item

The test items of this test are as follows:

- Display MAC address
- EEPROM initialize
- LAN LED test
- Error table

4-12-4. Test contents

(1) Display MAC address

The MAC address in the EEPROM in which the LAN controller setting data are saved is displayed.

(2) EEPROM initialization

The MAC address is set and the EEPROM built in the LAN controller is initialized.

(3) LAN LED test

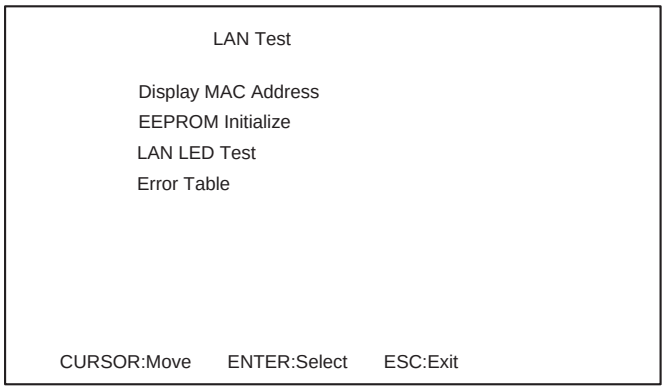
The LAN LED ON/OFF is tested.

(4) Error table

The error information of the above (1)~(3) saved in the DRAM is displayed.
If there is no error, "OK" or "NO ERROR" is displayed.

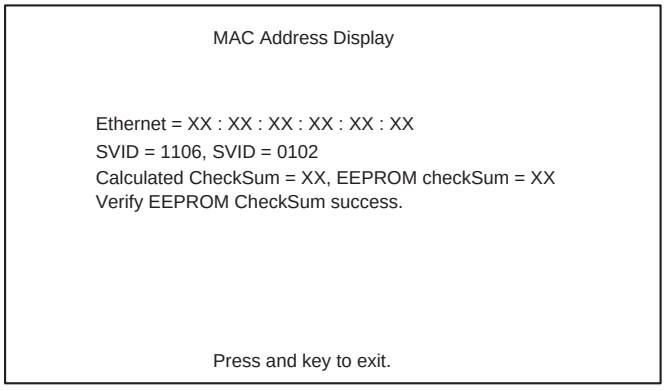
4-12-5. Test display

(1) Menu display



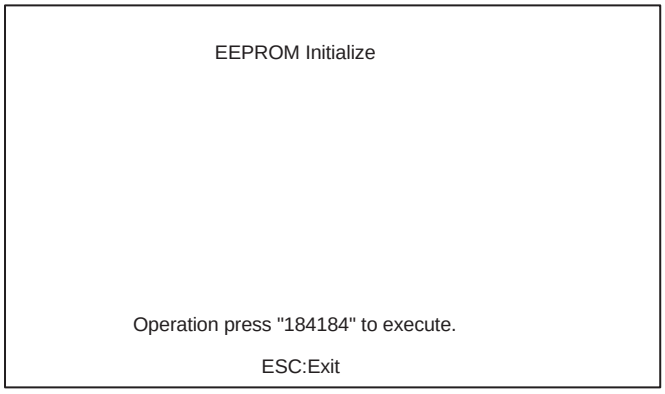
On the above display, select a test item with [↑] and [↓] keys and press [ENTER] key to execute the test.
When [ESC] key is pressed, the display returns to the initial menu display.

(2) MAC address display


MAC Address Display
Ethernet = XX : XX : XX : XX : XX : XX
SVID = 1106, SVID = 0102
Calculated CheckSum = XX, EEPROM checkSum = XX
Verify EEPROM CheckSum success.
Press and key to exit.

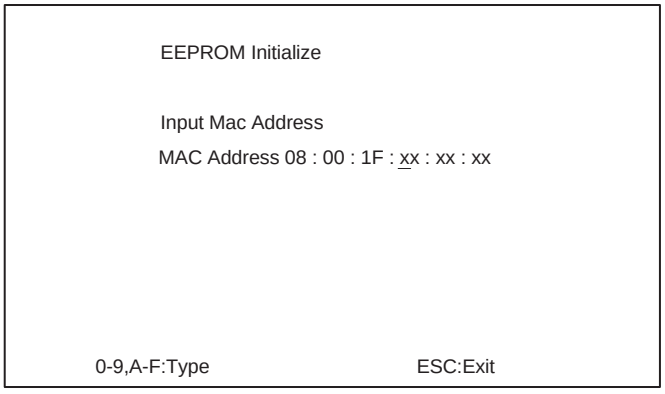
When any key is pressed, the display returns to the menu display.

(3) Display before executing EEPROM initialization



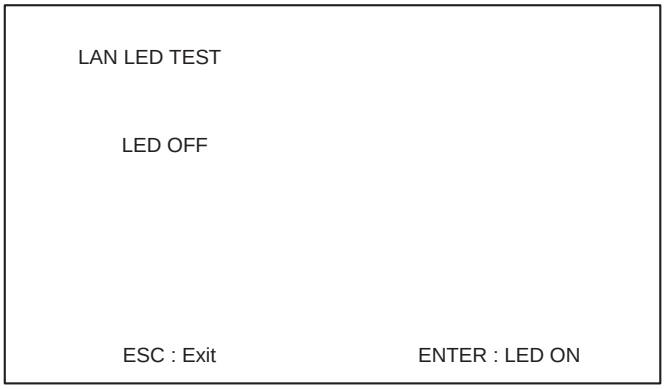
On the above display, enter "184184" with 10-key, and the display shifts to the initialization execution display of EEPROM. When [ESC] key is pressed, the display returns to the menu display.

(4) EEPROM initialization display



Enter the lower six digits (hexadecimal) of the MAC address set for the main PWB with [0] ~ [9] keys and [A] ~ [F] keys.
When the last digit is entered, "CONFIRM (OK NO)" is displayed, select "OK" and press [ENTER] key to execute initialization.
After execution of initialization, when any key is pressed, the display returns to the above display. When [ESC] key is pressed, the display returns to the menu display.

(2) LAN LED TEST screen



Every time the [ENTER] key is pressed, LED turns on and off alternately.
You can return to the menu screen by pressing the [ESC] key.

4-13. MCR TEST

4-13-1. General

This test is used to check the MCR read/write operations.

4-13-2. Jig to be used

- UP-X500 main unit diag execution media x 1
- Test card for R/W (UKOG-6662RCZZ) x 1
  Used to write/read data for the card.
  This card is used in write/read-verify.
- MCR 2 track test card for R/O (UKOG-6663RCZZ) x 1
  This card holds a series of data, and is used only in read.
  This card is used in the read test.
- MCR 3 track test card for R/O (UKOG-2357RCZZ) x 1
  This card holds a series of data, and is used only in read.
  This card is used in the read test.

4-13-3. Test item

The test items of this test are as follows:

- MCR read test (3 tracks)
- MCR read test (2 tracks)
- MCR write/read-verify test
- Any card read test
- Error table

4-13-4. Test contents

(1) MCR read test (2 tracks)

∗Since this test is an object for debugging, it is not used by the service manual.

Use the MCR test card (R/O) to execute the test.
The MCR test card is read and verified to check.
There are two patterns of read data:

JBA data pattern : Same as the JBA data pattern of (1)

ABA data pattern : "12345678901234567890123456789012345678901234567" (37 characters)

In data read, the parity bit of each character is checked. The LRC code is also checked.
Test operations (One cycle of test)

JBA pattern read/verify : The test result is displayed.

ABA data pattern read/verify : The test result is displayed.

(2) MCR Read Test (3 tracks)

The test is performed using the MCR test card (R/O)
Verify checks are performed by reading the MCR test card.
There are three types of data patterns that can be read.

IATA data pattern: "SHARP TEST CARD 0123456789ABCD~XYZ 0123456789 UKOG-6718RCZZ"(76 characters)

ABA data pattern 1: "01234567890123456789012345678901234567" (28 characters)

ABA data pattern 2: "0123456789~01234567890123456789 (100 characters)

When data is read, the parity bit of each character is checked. In addition, the LRC code is also checked.

Test action (1 test)

IATA data pattern Read/Verify : The test result is displayed.

ABA data pattern 1 Read/Verify : The test result is displayed.

ABA data pattern 2 Read/Verify : The test result is displayed.

(3) MCR write/read-verify test

∗Since this test is an object for debugging, it is not used by the service manual.

The MCR test card (W/R) is used to execute the test.
The JBA data are written into the MCR card, and then the verify check is executed.
There are following two write patterns:

JBA data pattern 1 : "*SHARP*TEST-CARD*ABCDE - XYZ 123456789012345678901 2" (69 characters)

JBA data pattern 2: : "2*SHARP*TEST-CARD*ABCDE - XYZ 123456789012345678901" (69 characters)

When writing data, a parity bit is added to each character. The LRC code is also calculated and added.
When reading data, the parity bit of each character is checked. The LRC code is also checked.

Test operations (One cycle of test)

Data pattern 1 write
↓
Data pattern 1 read/verify. Data pattern 1 test result is displayed.
↓
Data pattern 2 write
↓
Data pattern 2 read/verify. Data pattern 1 test result is displayed.

In the write test, "Write" is highlighted. When the card is passed and write is completed, "Read" is highlighted and the mode is shifted to the card read wait state.
When reading is completed, data are checked and the result is displayed.

(4) Any card read test

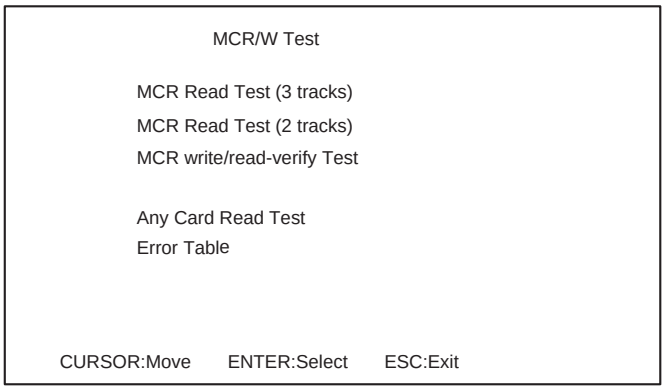
Similar to the previous test (2). However, read data are not checked.

(5) Error table

The error information of the above (1) - (3) recorded in the DRAM is displayed.
If there is no error, "OK" or "NO ERROR" is displayed.

4-13-5. Test display

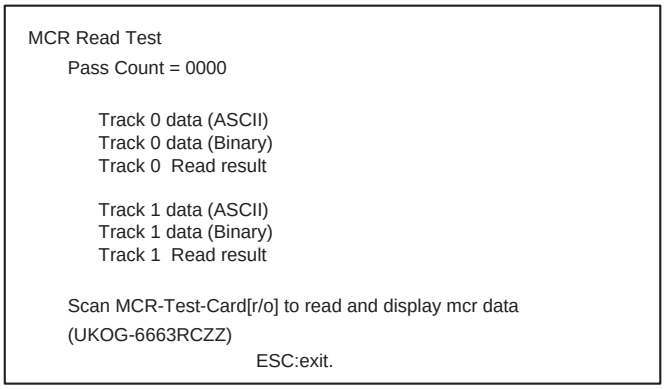
(1) MC R/W test menu display



On the above menu, use [↑] and [↓] keys to select a test item. Press [ENTER] key to execute the test. When [ESC] key is pressed, the display returns to the initial menu.

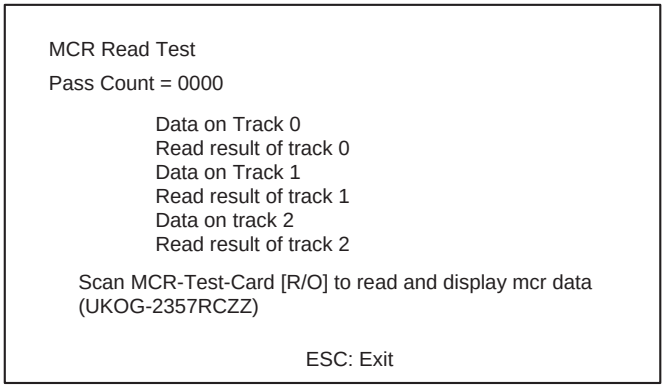
(2)Read-verify test (2 tracks) execution display

∗Since this test is an object for debugging, it is not used by the service manual.



By the card operation, the test is executed and each information is displayed.
When [ESC] key is pressed, the display returns to the menu display.

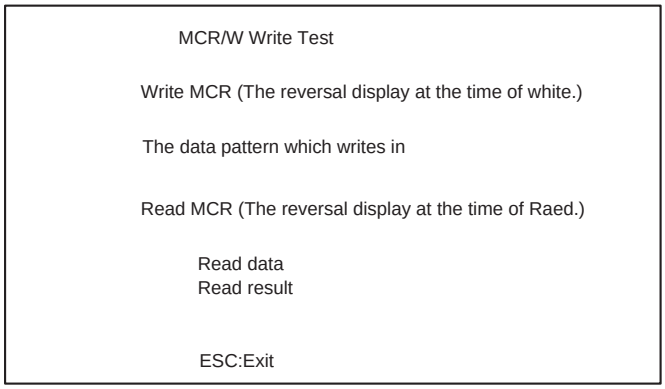
(3) Read-Verify Test (3 tracks) screen


MCR Read Test
Pass Count = 0000
Data on Track 0
Read result of track 0
Data on Track 1
Read result of track 1
Data on track 2
Read result of track 2
Scan MCR-Test-Card [R/O] to read and display mcr data
(UKOG-2357RCZZ)
ESC: Exit

The test is performed by inserting the card and the information is displayed.
You can return to the menu screen by pressing the [ESC] key.

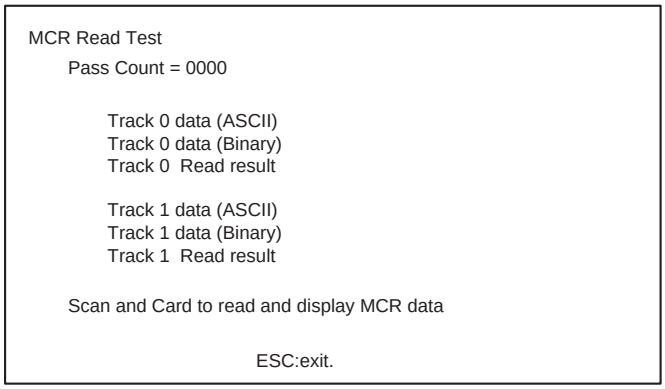
(4) Write/read-verify test execution display

∗Since this test is an object for debugging, it is not used by the service manual.


MCR/W Write Test
Write MCR (The reversal display at the time of white.)
The data pattern which writes in
Read MCR (The reversal display at the time of Raed.)
Read data
Read result
ESC:Exit

When the card operations are executed for 4 times in total, the test is terminated.
When [ESC] key is pressed, the display returns to the menu display.

(5) Any card read test execution display


MCR Read Test
Pass Count = 0000
Track 0 data (ASCII)
Track 0 data (Binary)
Track 0 Read result
Track 1 data (ASCII)
Track 1 data (Binary)
Track 1 Read result
Scan and Card to read and display MCR data
ESC:exit.

By the card operation, the test is executed and each information is displayed.
When [ESC] key is pressed, the display returns to the menu display.

4-13-6. Magnetic card format

The magnetic card conforms to JISX6301.

(1) JISX6301 II-make (JBA)

(1) - 1. Character to be used

7 units, even parity

b8	Parity bit
b7	Character bit
b6	
b5	
b4	
b3	
b2	
b1	

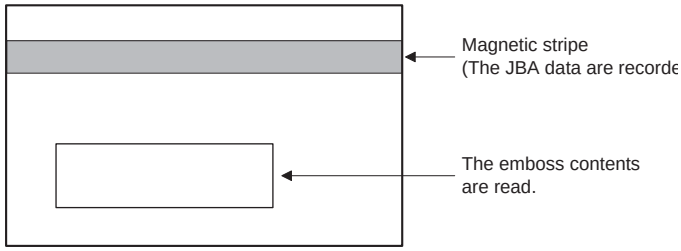
↓ Card slide direction

(1) - 2. Character composition

Character No.	1	2 - 70	71	72
Name	(1) Header	(2) Data	(3) Stop code	(4) LRCC

(1) - 3. Character descriptions

① Header : For detection of data start (SFFH)
② Data : Data area
③ Stop code : For detection of data end (SFFH)
④ LRC code : Even number check code for characters No. 2 - 71



(Card surface)

(2) JISX6302 I-make (ABA)

(2) - 1. Characters to be used.

4 units, odd parity

b5	Parity bit
b4	Character bit
b3	
b2	
b1	

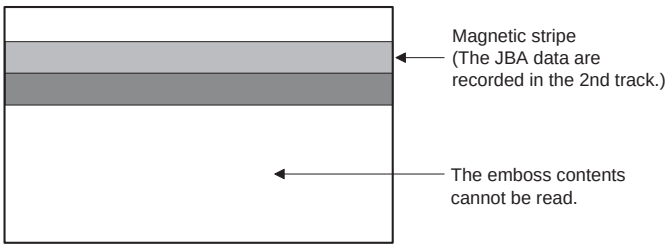
↓ Card slide direction

(2) - 2. Character composition

Character No.	1	2 - 28	39	40
Name	(1) Header	(2) Data	(3) Stop code	(4) LRCC

(2) - 3. Character descriptions

1 Header : For detection of data start (S0BH)
2 Data : Data area
3 Stop code : For detection of data end (S1FH)
4 LRC code : Even number check code for characters No. 2 - 39



(Card back surface)

(3) Parity bit, LRC code adding method

Set as follows:

	<JBA>									<ABA>								
		B7	6	5	4	3	2	1	B0		B7	6	5	4	3	2	1	B0
For 1 byte	Header code	1	1	1	1	1	1	1	1	Header code	1	1	1	1	1	1	1	1
For 2 byte	Data 1 character "1"	1	0	1	1	0	0	0	1	Data 1 character "1"	0	0	0	0	0	0	0	1
For 3 byte	Data 2 character "2"	1	0	1	1	0	0	1	0	Data 2 character "2"	0	0	0	0	0	0	1	0
|	|									|								
For 37 byte	Data 36 character "A"	0	1	0	0	0	0	0	1	Data 36 character "6"	0	0	0	1	0	1	1	0
For 38 byte	Data 37 character "B"	0	1	0	0	0	0	1	0	Data 37 character "7"	0	0	0	0	0	1	1	1
For 39 byte	Data 38 character "C"	1	1	0	0	0	0	1	1	Stop code	0	0	0	1	1	1	1	1
For 40 byte	Data 39 character "D"	0	1	0	0	0	1	0	0	LRC code	0	0	0	0	1	1	0	1
|	|																	
For 69 byte	Data 68 character																	
For 70 byte	Data 69 character																	
For 71 byte	Stop code	1	1	1	1	1	1	1	1									
For 72 byte	LRC code	0	1	1	1	1	0	0	0									

JBA - LRC code: 2 byte - 72 byte

ABA - LRC code: 2 byte - 39 byte

The even parity of each bit is calculated.

∗See the above table vertically.

JBA - Each character is an even parity of bit 0 - bit 6.
ABA - Each character is an odd parity of 0 bit - 3 bit.

Calculation is made as above.

∗See the above table vertically.

4-14. PCMCIA TEST

4-14-1. General

This test is used to check the PCMCIA (2 slots).

4-14-2. Jig to be used

- UP-X500 main unit diag execution media x 1
- SYCARD PCC test 450F (Card BUS) x 1

4-14-3. Test items

The test items of this test are as follows:

- PCMCIA test (Slot Low)
- PCMCIA test (Slot, High)
- Error table

4-14-4. Test contents

(1) PCMCIA test (Slot Low)

The PCMCIA lower slot is checked.

(2) PCMCIA test (Slot High)

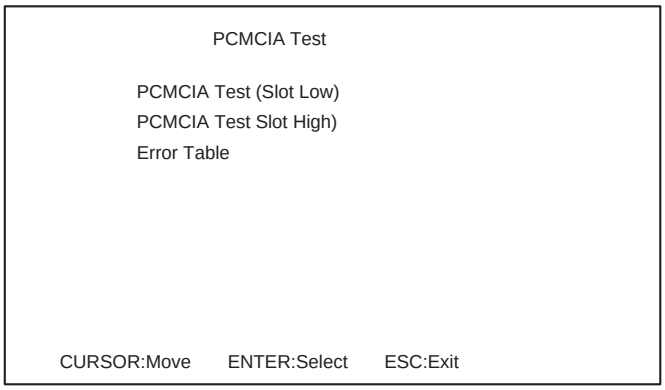
The PCMCIA upper slot is checked.

(3) Error table

The error information of the above (1) ~ (2) recorded in the DRAM is displayed. When there is no error, "OK" or "NO ERROR" is displayed.

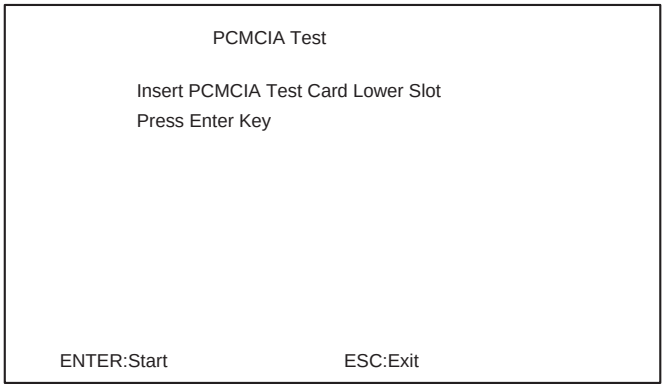
4-16-5. Test display

(1) Menu display



On the above menu, use [↑] and [↓] keys to select a test item. Press [ENTER] key to execute the test. When [ESC] key is pressed, the display returns to the initial menu.

(2) PCMCIA test (Slot Low) display



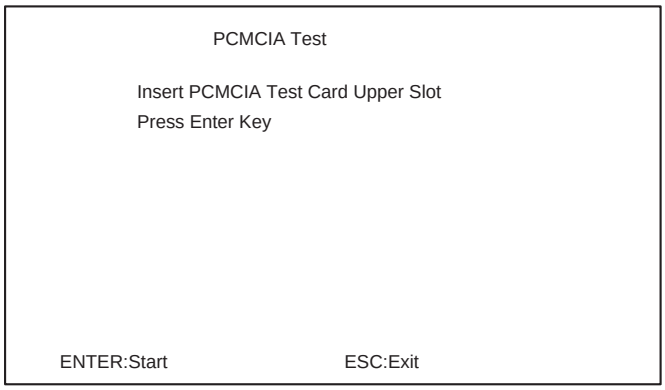
When [ENTER] key is pressed, the test is executed.

The test result is displayed on the bottom of the display.

- When OK : TEST OK!
- When Error: TEST ERROR!

When any key is pressed after execution of the test, the display returns to the initial menu display.
When [ESC] key is pressed, the display returns to the initial menu display.

(3) PCMCIA test (Slot High) display



When [ENTER] key is pressed, the test is executed.

The test result is displayed on the bottom of the display.

- When OK : TEST OK!
- When Error: TEST ERROR!

When any key is pressed after execution of the test, the display returns to the initial menu display.
When [ESC] key is pressed, the display returns to the initial menu display.

4-15. Information Display

4-15-1. General

The CPU information, the BIOS version, the PCP3 version, and the shorter setting are displayed.

4-15-2. Jig to be used

- UP-X500 main unit diag execution media x 1

4-15-3. Test item

The test item of this test is as follows:

- Information display

4-15-4. Test contents

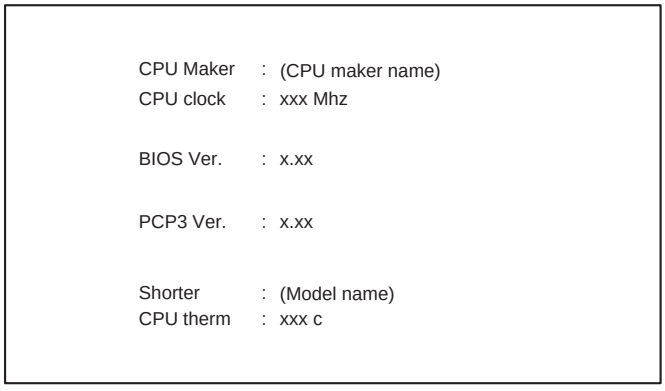
(1) Information display

The CPU maker name, the clock frequency, the BIOS version, the PCP3 version, the shorter setting are displayed.

∗The clock frequency is a measured value, and may include a slight error.

4-15-5. Test contents

(1) Information display



CPU Maker	:	The CPU maker name is displayed.
BIOS Ver.	:	Bios version No. is displayed.
PCP3 Ver.	:	PCP3 version No. is displayed.
Shorter	:	Shorter setting is displayed by the model name (UP-X500, RZ-A340, RZ-A340W, etc.)
CPU therm	:	CPU temperature is displayed.

When any key is pressed, the display returns to the menu display.

4-16 WMF Clerk Key Test

4-16-1.Outline

The read test of the WMF clerk key is performed.

4-16-2.Tool to be used

- UP-X500 system unit diagnostic test execution media x 1

4-16-3.Items to be checked

The following items will be checked:

Clerk test

Error table

4-16-4. Detail of test

(1) Clerk Test

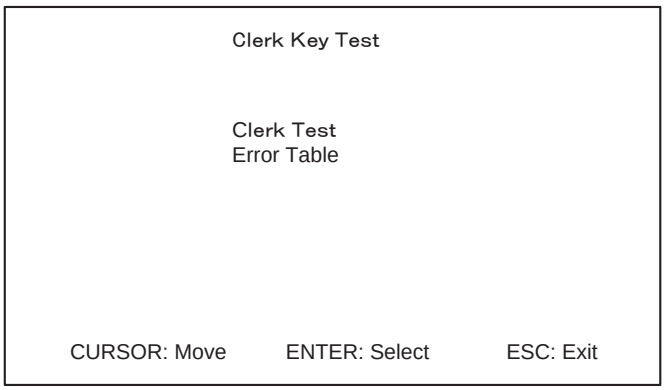
The read data of the clerk key is displayed.

(2) Error Table

A list of error information on (1) Clerk Test recorded in DRAM is displayed.
If no error occurs, OK or NO ERROR is displayed.

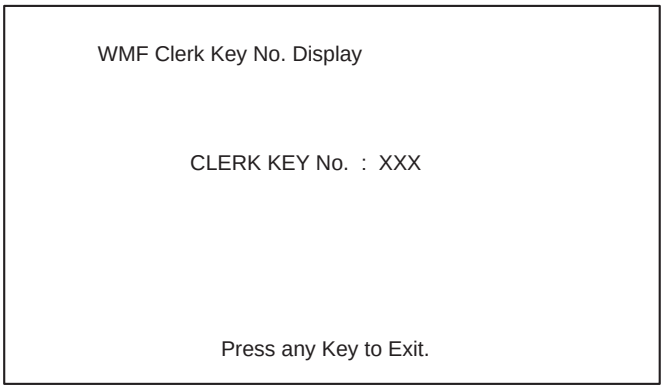
4-16-5. Test screen

(1) Menu screen



With the above screen displayed, select the test item you want to execute using [↑] and [↓] keys, and then press [ENTER] to execute the test.
You can return to the initial menu screen by pressing the [ESC] key.

(2) Contactless Clerk Key Test screen



The number of the clerk key connected to the system unit is displayed.
The display returns to the initial screen when any key is pressed.

4-16-6. Errors

(1) PCP3 Send Time Out

(2) PCP3 Receive Time Out

(3) PCP3 Response Error

Command response error.

Erroneous read data end code

4-17 CONTACTLESS CLERK KEY TEST

4-17-1. Outline

The read test of the contactless clerk key is performed.

4-17-2. Tool to be used

• UP-X500 system unit diagnostic test execution media x 1

4-17-3. Items to be checked

The following items will be checked:
Contactless clerk key
Error table

4-17-4. Detail of test

(1) Contactless Clerk Key Test

The read data of the contactless clerk key is displayed.

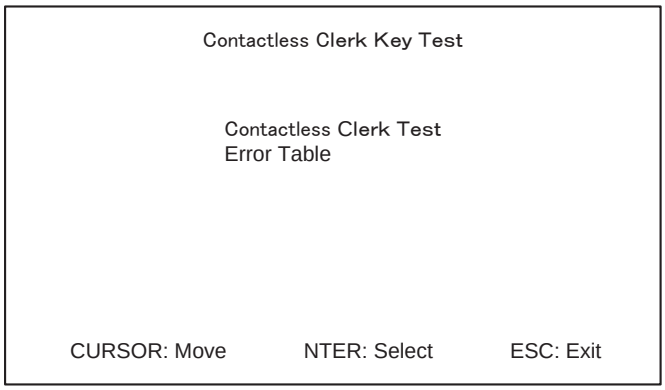
(2) Error Table

A list of error information on (1) Contactles Clerk Key Test recorded in DRAM is displayed.

If no error occurs, OK or NO ERROR is displayed.

4-17-5.Test screen

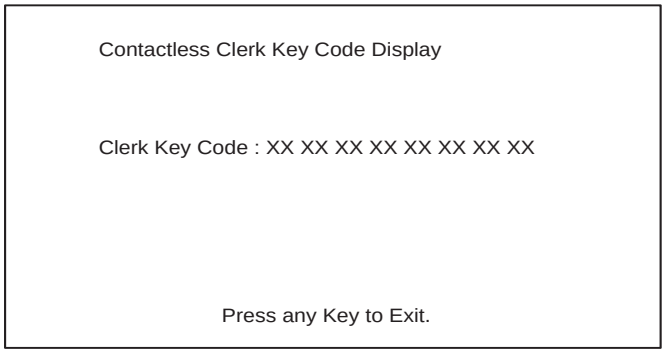
(1) Menu screen



With the above screen displayed, select the test item you want to execute using [↑] and [↓] keys, and then press [ENTER] to execute the test.

You can return to the initial menu screen by pressing the [ESC] key.

(2)Contactless Clerk Key Test screen



The number of the clerk key connected to the system unit is displayed.

The display returns to the initial screen when any key is pressed.

4-17-6. Errors

(1) Read Data Header Error

(2) Read Data SUM Error

(3) Read Data Footer Error

Erroneous read data end code

(4) SIO Send Time Out

No send data cannot be written.

(5) SIO Receive Time Out

4-18. PCP3 Update

4-18-1. Outline

The PCP3 firmware is updated.

4-18-2. Tool to be used

• UP-X500 system unit diagnostic test execution media x 1

4-18-3. Items to be checked

The following items are checked by this test:

PCP3 Update

Error table

4-18-4. Detail of test

(1) PCP3 Update

The PCP3 firmware is updated.

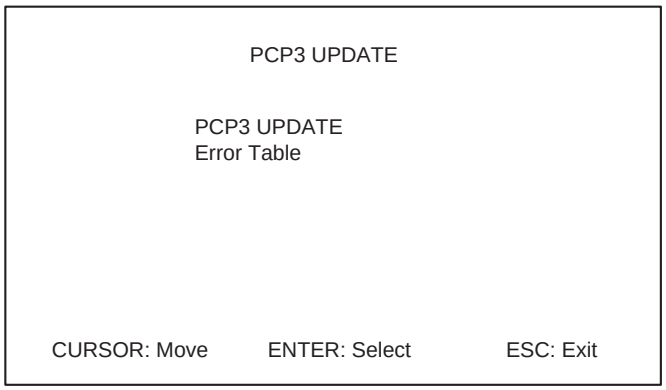
(2) Error Table

A list of error information on (1) PCP3 Update recorded in DRAM is displayed.

If no error occurs, OK or NO ERROR is displayed.

4-18-5. Test screen

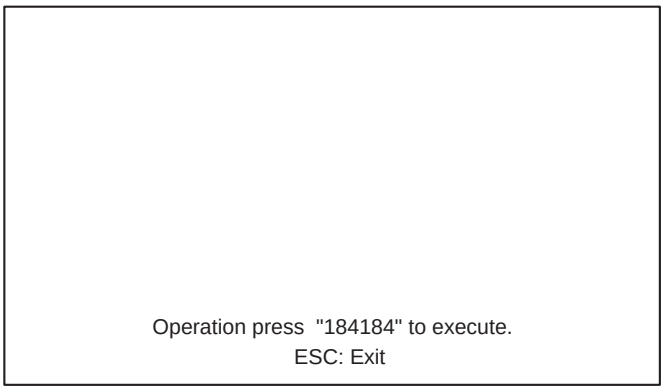
(1) Menu screen



With the above screen displayed, select the test item you want to execute using the [↑] and [↓] keys, and then press the [ENTER] key to execute the test.

You can return to the initial menu screen by pressing the [ESC] key.

(2) Screen to be displayed before executing PCP3 update

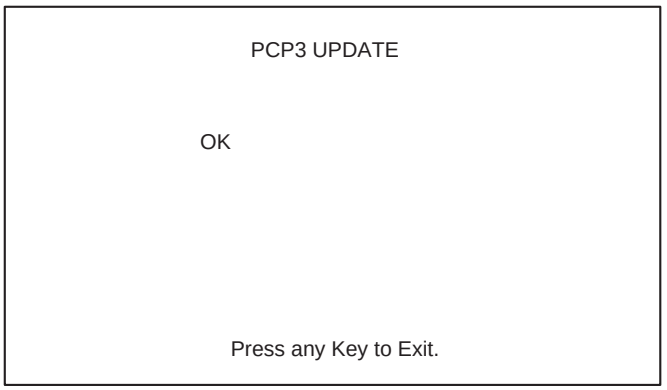


With the above screen displayed, type "184184" using the numeric keypad.

EEPROM will be initialized and then the execution screen will appear.

You can return to the menu screen by pressing the [ESC] key.

(3) PCP3 Update screen



The PCP3 firmware unloader is executed and the result is displayed.
The display will return to the initial menu screen when any key is pressed.

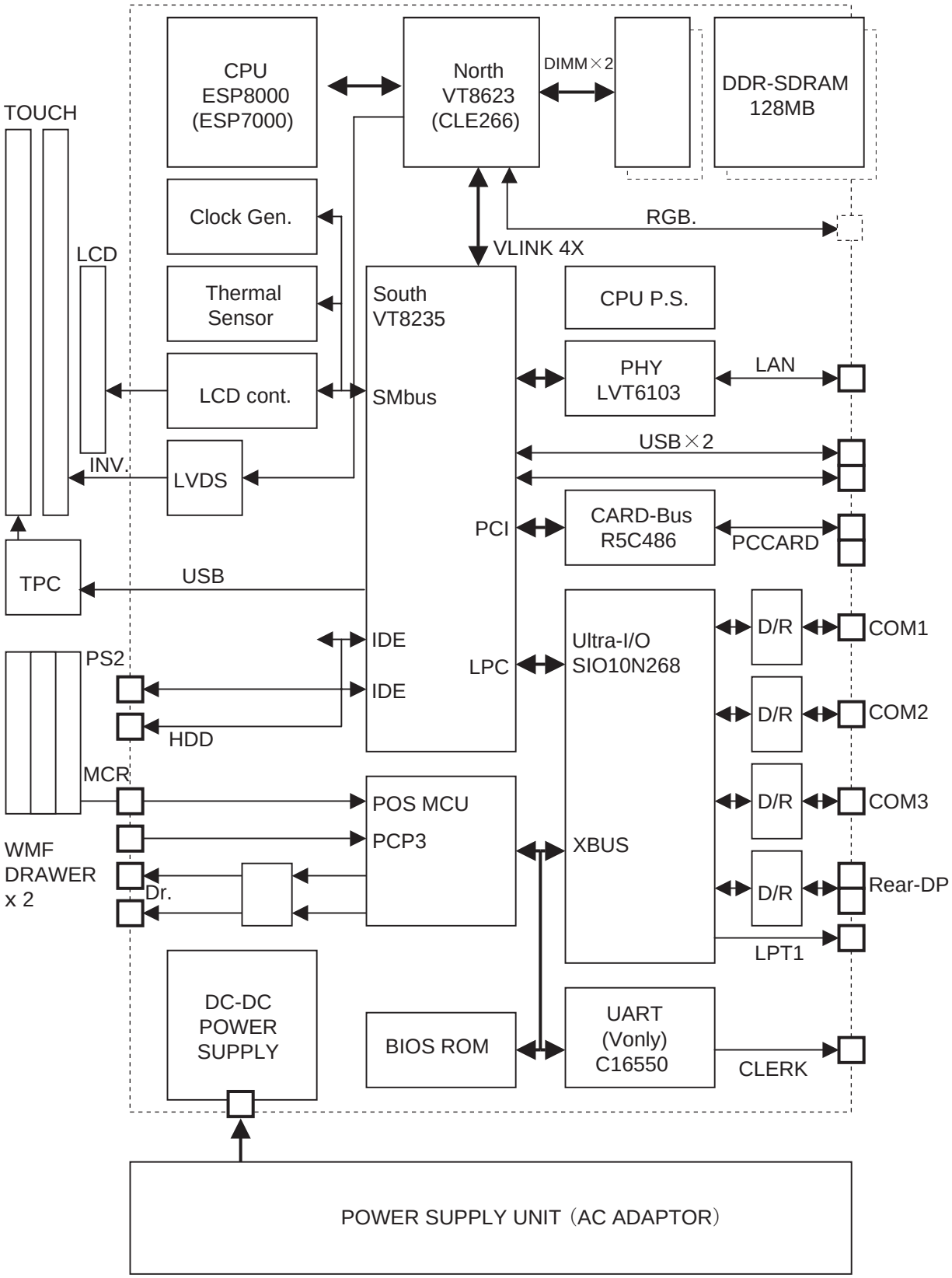
CHAPTER 5. CIRCUIT DESCRIPTION

1. OUTLINE

Item			UP-X500
CPU	CPU		VIA Eden: 800MHz
	BUS clock		133MHz
	L1, L2 Cashe		CPU Built-in (128kB, 64kB)
	CPU fun		NO
Chipset/Companion			CLE266
Memory	Standard	Spec	DDR-SDRAM PC2100
		Size	128MB
			184pinDIMM
	Option	Spec	DDR-SDRAM PC2100 184 pinDIMM (Max.512MB)
		Socket	1
	ECC support	No	
BIOS/BOOT			4M bit Flash PROM
PCI			No
3.5'FDD			No
IDE port	Spec		UltraATA100
	Primary		Master
	Secondary		No
DISK	Standard		HDD 30GB
	Option		No
Display (LCD)	Size		12.1inch TFT color
	Resolution		XGA
Display controller	Controller		CLE26 Built-in
	CPU I/F		AGP x 4 (LSI Internal connection)
	VRAM		8~64MB (Soft setup)
	RGB output		No
Touch Panel	Touch panel		Fujitsu4wire
	Controller		FUjitsu
	CPU I/F		USB
Ethernet			100 Base-TX/10Base-T
Sound	Controller		No
	Mono-speaker		Yes (BEEP only)
	Stereo lineout		No
Sirial port			16550 Fast UART Compatible
	Controller		NS SIO10N268
	External Channel		3
	COM1		D.Sub9pin
	COM2		D.Sub9pin (Ci signal/+5V soft-warecontrol)
	COM3		D.Sub9pin
CustomerDisplay			COM4
	Controller		NS SIO10N268
	UP-P20DP		RJ45
	UP-I20DP		(UP-I20DP only)

Item		UP-X500
External Parallelport	Spec	LPT1
	Controller	NS SIO10N268
	Channel	1
	Connecter	D.sub25pin
USB port		USB2.0 x 2
PS/2		Yes
PC-CARD I/F	Spec	Card-bus,16bitPCMCIA-Card
	Controller	RICHO R5C486
	Slot	2
Magnetic card reader	Spec	3 trackreader
	Controller	PCPIII
	Option	No
DrawerI/F	Controller	PCPIII
	Connecter	2
POS key board		No
POS Printer		No
LED	HDD access	No
	LAN access	No
	Power	Yes
SWITCH	AC Power switch	
WMF clark I/F	Standard	Yes (V only)
	Controller	PCPIII
Contactless clark I/F	Standard	Yes (V only)
	Controller	UART
Battery		C.MOS RAM BackupLithium

2. BLOCKDIAGRAM



3. PERIPHERAL CONTROLLER FOR POS (III)

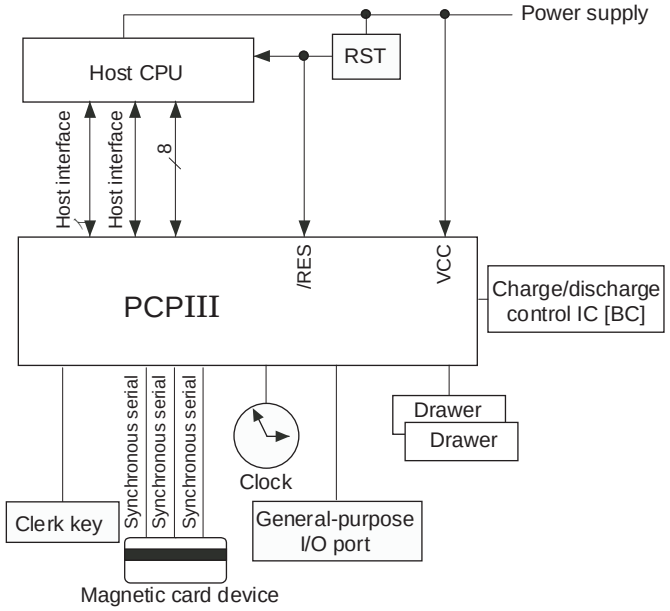
1. OUTLINE

1-1. FUNCTION

Peripheral Controller for POS (III) (hereafter called PCPIII) uses Hitachi microprocessor H8S2138 and has the following functions:

- Magnetic card read and write control
- Clock control
- Clerk key I/F
- Drawer I/F
- General-purpose input port (x8 bit) and input/output port (x 8 bit) control

1-2. SYSTEM CONFIGURATION



1-3. DESCRIPTION OF FUNCTIONS

1-3-1. Interface with host

(1) Outline

The PCPIII sends and receives commands and data to and from the host CPU through two host interfaces which are classified by function into the following two categories:

Function	Interface	Host interrupt signal
Magnetic card	Host interface ch1	HiRQ12
Other than above	Host interface ch2	HiRQ11

(2) Returned data sequence

The PCPIII executes commands from the host CPU on a multitask operation basis. There is a possibility that data are not returned to the CPU in the order the PCPIII has received. The order of data should be identified by the identification code contained in data to be returned from the PCPIII to the host CPU.

Host CPU		PCPIII
Instruction for device 1	→	
Instruction for device 2	→	
		← Data returned to device 2
		← Data returned to device 1

(3) Execution of commands

The addresses to which a command and data from the host CPU to the PCPIII are different. Therefore, the PCPIII analyzes a command it has received and waits for necessary data. It is thus necessary to send a command and data from the host CPU to the PCPIII as a matched pair.
It is not until the PCPIII analyzes a command and receives necessary data that it executes the instruction.
If the number of data following a command is not as specified, the results is as follows.

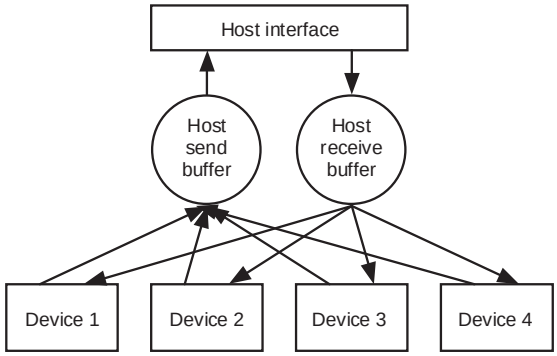
(3)-1. If the number of data is insufficient:

- The PCPIII waits for data for good.
- The PCPIII ignores the instruction and the data whose number is insufficient when it receives a new instruction before receiving the necessary number of data.

(3)-2. If more than necessary number of data is received

The number of data required by a command is taken and the subsequent data are ignored.

(4) Host interface



(4)-1. Host CPU → PCPIII

Commands and data for devices sent from the host CPU to the PCPIII are once stored in the host receive buffer. Commands and data stored are then sent to the input buffer of each device.
If any one of the input buffers becomes full, the subsequent commands and data sent from the host CPU to the PCPIII are stored in the host receive buffer. If the host receive buffer is full, it no longer receives commands and data from the host CPU.

(4)-2. PCPIII → host CPU

Data and status sent from each device to the host CPU are once stored in the host send buffer and then sent to the host according to the read action of the host CPU.
If data and status sent from each device to the host CPU cannot be stored because the host CPU does not read the content of the host send buffer, the processing of a command given from the host CPU is suspended in principle. For this reason, if sending of commands and data from the host CPU to the PCPIII is continued, the host receive buffer becomes full, making it impossible to receive commands and data any further.

1-3-2. Magnetic card

Three tracks of data can be read simultaneously and 1 track of data can be written.
The room key card of magnetic stripe record type (Miwa Lock) is the JIS-II type (JBA), but the start code of the JIS-type's second track (ABA) or the JIS-I type's first track (JATA) is recorded at the beginning of the magnetic stripe.
As a result, when the start code is automatically identified by the controller, data of the JIS II type cannot be read. Therefore, a special measure for the JIS II type has been taken instead of performing automatic identification of the start code.
To avoid this problem, the magnetic card will be decoded by the host CPU.
Therefore, bit data received by the PCPIII will be sent to the host CPU as it is.
In addition, written data will also be sent from the host CPU to the PCPIII as bit data. This makes it possible to support any type of magnetic stripe recording. It will also be possible to analyze read errors of a demagnetized magnetic card.

PIN TABLE

Here is the pin table for the PCPIII

No.	Function	Remarks	I/O
1	/RES		Input
2	XTAL		
3	EXTAL		
4	MD1		Input
5	MD0		Input
6	NMI		Input
7	/STBY		Input
8	VCC2		
9	MCR_RCP1	SCK0	Input
10	MCR_RDD1#	RxD0	Input
11	MCR_DiN1#	TxD0	Output
12	VSS		
13	B-D1	P97	I/O
14	B-D0	P96	I/O
15	/CS1		Input
16	/IOW		Input
17	/IOR		Input
18	MCR_CSL1#	IRQ0#	Input
19	MCR_CLS2#	IRQ1#	Input
20	MCR_CLS3#	IRQ2#	Input
21	Pio0	P60	
22	Drawer1 IN	P61	Input
23	Drawer1 OUT	FTOA	Output
24	MCR_RWC1#	P63	Output
25	MCR_WTS1	P64	Input
26	Drawer2 IN	P65	Input
27	Drawer2 OUT	FTOB	Output
28	/B-SEL	P67	Output
29	AVCC		
30	MCR_0	P70	Input
31	MCR_1	P71	Input
32	Pi2	P72	Input
33	Pi3	P73	Input
34	Pi4	P74	Input
35	Pi5	P75	Input
36	Pi6	P76	Input
37	/B-ACK	P77	Input
38	AVSS		
39	LED_PWR#	P40	Output
40	MCR_RDD3#	RxD2	Input
41	MCR_RCP3	SCK2	Input
42	HIRQ11		Output
43	Pio1	P44	I/O
44	HIRQ12		Output
45	Pio2	P46	I/O
46	Pio3	P47	I/O
47	VCC1		
48	Clerk DATA7	P27	Input
49	Clerk DATA6	P26	Input
50	Clerk DATA5	P25	Input
51	Clerk DATA4	P24	Input
52	Clerk DATA3	P23	Input
53	Clerk DATA2	P22	Input
54	Clerk DATA1	P21	Input
55	Clerk DATA0	P20	Input
56	VSS		
57	Alarm_CLK	P17	Output
58	Alarm_DATA	P16	I/O
59	Alarm_CE	P15	Output
60	Pio4	P14	I/O
61	Pio5	P13	I/O
62	Pio6	P12	I/O
63	Pio7	P11	I/O
64	/B-STB	P10	Output
65	HDB0		I/O
66	HDB1		I/O
67	HDB2		I/O
68	HDB3		I/O
69	HDB4		I/O
70	HDB5		I/O
71	HDB6		I/O
72	HDB7		I/O
73	VSS		
74	HA0		Input
75	/CS2		Input
76	Pi0	P82	Input
77	Pi1	P83	Input
78	Drawer-IN	IRQ3#	Input
79	MCR_RDD2#	RxD1	Input
80	MCR_RCP2	SCK1	Input

HOST INTERFACE

Bus control

Host CPU side					Direction of data flow	Type	PCPIII side		
/CS1	/CS2	HA0	/WR	/RD	Host CPU ⇔ PCP III		Name	Abb	R/W
0	1	0	0	1	→	Data	Input register1	IDR1	R
0	1	1	0	1	→	Command			
0	1	0	1	0	←	Data	Output register	ODR	W
									R
0	1	1	1	0	→	Status	Status register1	STR1	W
									R
1	0	0	0	1	→	Data	Input register2	IDR2R	R
1	0	1	0	1	→	Command			
1	0	0	1	0	←	Data	Output register2	SODR 2	W
									R
1	0	1	1	0	←	Status	Status register2	STR2	R
									W

REGISTER

Input data registers 1/2 (ODR1/2)

Bit	:	7	6	5	4	3	2	1	0
		IDR7	IDR6	IDR5	IDR4	IDR3	IDR2	IDR1	IDR0
Initial value	:	—	—	—	—	—	—	—	—
PCPIII	:	R	R	R	R	R	R	R	R
Host CPU	:	W	W	W	W	W	W	W	W

This is an 8-bit read/write enable register for the PCPIII and 8-bit read-only register for the host CPU.

The initial value is undefined when the system is reset or in the stand-by mode.Register

Output data registers 1/2 (ODR1/2)

Bit	:	7	6	5	4	3	2	1	0
		IDR7	IDR6	IDR5	IDR4	IDR3	IDR2	IDR1	IDR0
Initial value	:	—	—	—	—	—	—	—	—
PCPIII	:	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
Host CPU	:	R	R	R	R	R	R	R	R

This is an 8-bit read/write enable register for the PCPIII and 8-bit read-only register for the host CPU.
The initial value is undefined when the system is reset or in the stand-by mode.

STATUS REGISTER 1/2 (STR1/2)

Bit	:	7	6	5	4	3	2	1	0
		IDR7	IDR6	IDR5	IDR4	IDR3	IDR2	IDR1	IDR0
Initial value	:	—	—	—	—	—	—	—	—
PCPIII	:	R/W	R/W	R/W	R/W	R/W	R/W	R/W	R/W
Host CPU	:	R	R	R	R	R	R	R	R

This shows the status of host interface processing.

Error (ERR)

This indicates that the main routine of the PCPIII is destroyed and the loader of the boot block A or B waits for loading of write/erase control program.

0 : PCPIII operates normally
1 : Waits for loading of write/erase control program

Command/data (C/D)

When the host CPU writes data to IDR, the status of HA0 is written and whether the content of IDR is data or command is identified.

0 : The content of input data register (IDR1/2) is data
1 : The content of input data register (IDR1.2) is a command.

Ready/Busy (R/B)

This register indicates that the PCPIII is performing internal processing and cannot receive any command from the host.

0 : PCPIII is busy and cannot receive commands from host.
1 : PCPIII is ready for receiving commands from host.

The bit becomes 0 when:

- The PCPIII is initialized after turned on
- The PCPIII does not want to receive any command (data) from the hostor any reason although the input data register full (IBF) is 0.

Input data register full (IBF)

When the host CPU writes data in the IDR, the IBF bit is set to 1. This becomes a factor for internal interruption against the PCPIII.

When the PCPIII reads data from the IDR, the IBF bit is cleared to 0.

Data read from the IDR is once stored in the host receive buffer composed of the ring buffer.
If the host receive buffer is full, IBF interruption should be inhibited and any command from the host should not be received.

0 : [Clear condition] PCPIII reads IDR.
1 : [Set condition] Host CPU writes IDR.

Output data register full (OBF)

When the PCPIII writes ODR, the OBF bit is set to 1.
When the host CPU read ODR, the OBF bit is cleared to 0.

0 : [Clear condition] Host CPU read ODR.
1 : [Set condition] PCPIII writes ODR.

4. HOW TO USE AS THE UP-X500.

4-1. I/O ADDRESSES

ch	I/O address	R/W	Type	Register	Interruption	Host interruption	Control device
1	7F0h	R	Data	Output register 1 (ODR1)	HiRQ12	iRQ15	Magnetic card Command
		W	Data	Output register 1 (iDR1)			
	7F1h	R	Status	Status register 1 (STR1)			
		W	Status	Input register 1 (DR1)			
2	7F2h	R	Data	Output register 2 (ODR2)	HiRQ11	iRQ15	Other than others
		W	Data	Output register 2 (iDR2)			
	7F3h	R	Status	Status register 2 (STR2)			
		W	Command	Input register 2 (DR2)			

4-2. HOW TO USE GENERAL-PURPOSE PORTS

4-2-1.Input ports

Pin	Function
Pi0	Model identification 0
Pi1	Model identification 1
Pi2	Model identification 2
Pi3	Model identification 3
Pi4	
Pi5	
Pi6	

The program identifies the model name according to the model identification numbers 0 - 3. By using this function, the following functions can be added.

- Software that runs only on the said model.
- Security that uses data encoded only by the said model.

Model identification				Model name
3	2	1	0	UP-X500
0	0	0	1	
0	0	1	0	
0	0	1	1	
0	1	0	0	
0	1	0	1	
0	1	1	0	
0	1	1	1	
1	0	0	0	
1	0	0	1	
1	0	1	0	
1	0	1	1	
1	1	0	0	
1	1	0	1	
1	1	1	0	
1	1	1	1	

4-2-2. I/O port

Pin	Function	I/O
Pio0	5V1	Output
Pio1	Reserved (5V2)	Output
Pio2		
Pio3		
Pio4		
Pio5		
Pio6		
Pio7		

(1) 5V1

Controls the supply of +5V output to COM2.

1 : Does not supply power

0 : Supplies power

(2) 5V2

Controls the supply of +5V output to the customer display.

1 : Does not supply power

0 : Supplies power.

4-3. CLOCK

RICHO real time clock RV5C339A. The alarm function is not used.

4-4. BC

The charge/discharge control function of the Nickel-hydrogen battery is not used.

4-5. SERIAL I/F

With a special program, it is possible to write PCPIII firmware through the COM1.

5. FUNCTIONAL SPECIFICATIONS

5-1. OUTLINE

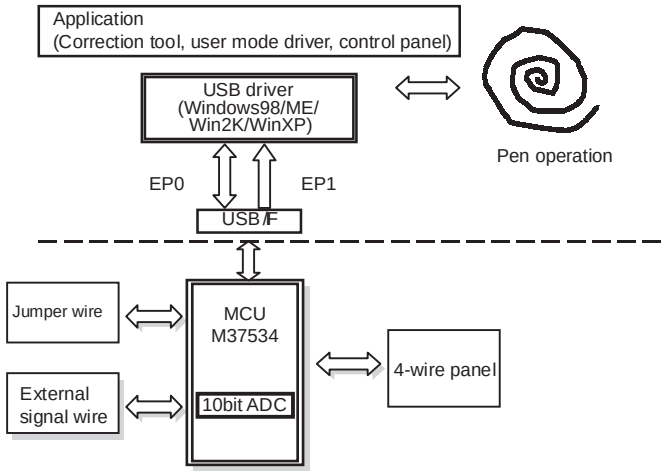
This MCU is a touch panel controller which can be operated as the standard HID under the USB host controller. It supports a 4-wire and 7-wire resistance film touch panels.

It provides 3 buttons (left, right and center), scroll buttons (four directions), and 13-bit absolute coordinates for the USB host. Disconnect is emulated by detecting the Low level/edge of the USB Disable signal.

After disconnecting by the Low level edge, Connect is emulated by detecting the High level edge.

This MCU does not have a correction function. An application including correction function is installed by installing a special device driver to the said OS.

5-2. CONFIGURATION



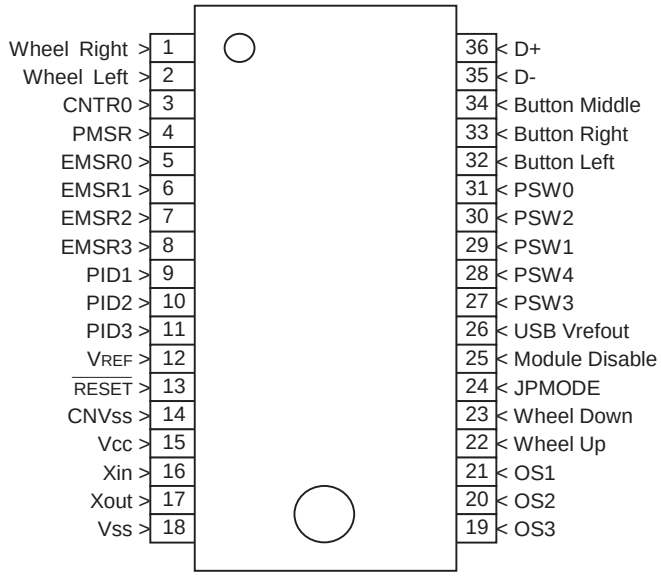
The shaded part in the above sketch indicates the MCU.

For detail of the diagram, see the circuit diagram C1NC41120-0015.

Note that the specified function of the MCU is best obtained using our genuine device driver.

5-3. PIN ARRANGEMENT AND FUNCTION

5-3-1.Pin arrangement diagram (7-wire type)



5-3-2.Pin list

Pin No.	Terminal name	I/O	Description
1.	Wheel Right	I	Right button
2.	Wheel Left	I	Left button
3.	CNTR0	I	Connected to No.4 pin
4.	EMSR0/PMSR	I	Panel electrode voltage measurement terminal
5.	EMSR1/EMSR0	I	Panel electrode voltage measurement terminal
6.	EMSR2/EMSR1	I	Panel electrode voltage measurement terminal
7.	EMSR3/EMSR2	I	Panel electrode voltage measurement terminal
8.	JPHID/EMSR3	O	HID class selection/panel electrode voltage measurement terminal
9.	PID1	O	PID selection terminal
10.	PID2	O	PID selection terminal
11.	PID3	O	PID selection terminal
12.	Vref	-	A/D converter reference voltage input terminal
13.	Reset	I	Reset input terminal
14.	CNVss	-	Connected to VSS
15.	Vcc	-	Power supply input terminal (5V)
16.	Xin	I	Clock input terminal
17.	Xout	O	Clock output terminal
18.	Vss	-	Power supply input terminal (0V)
19.	OS3	I	Home position selection terminal
20.	OS2	I	Home position selection terminal
21.	OS1	I	Home position selection terminal
22.	WheelUP	I	Upward scroll button
23.	WheelDOWN	I	Downward scroll button
24.	JPMODE	I	4/7 wire selection
25.	ModuleDisable	I	Disconnection operation simulation terminal
26.	USBVref	O	USB reference voltage output terminal
27.	PSW3	O	Panel drive switch control output terminal
28.	PSW4	O	Panel drive switch control output terminal
29.	PSW1	O	Panel drive switch control output terminal
30.	PSW2	O	Panel drive switch control output terminal
31.	PSW0	O	Panel drive switch control output terminal
32.	ButtonLeft	I	Left button
33.	ButtonRight	I	Right button
34.	ButtonMiddle	I	Center button
35.	USB D-	I/O	USB I/O terminal
36.	USB D+	I/O	USB I/O terminal

CHAPTER 6. Touch panel calibration utility

1. OUTLINE

This utility is for aligning press position and display position. This utility should be used to calibrate in following cases.

∗After installing Touch panel driver.

∗When Touch panel device was exchanged in case like service.
Calibration data are written in "Windows-Registry".
This utility is composed from the following screens.

∗The calibration screen which does calibration operation.

∗The drawing test screen which confirms a pressing position and displaying position in touch panel after calibration is finished.

[Notice] A full keyboard is necessary to operate this utility.
Touch panel driver must be set up in order to run this utility.

2. FUNCTION

The position calibration for the touch panel.

3. OPERATION

3-1. LAUNCHING UTILITY

Windows2000:
From task bar, touch [Start]-[Program]-[Fujitsu Touch Panel (USB)]-[Touch Screen Calibration utility] to launch.

Windows XP:
From task bar, touch [Start]-[All Programs]-[Fujitsu Touch Panel (USB)]-[Touch Screen Calibration utility] to launch.

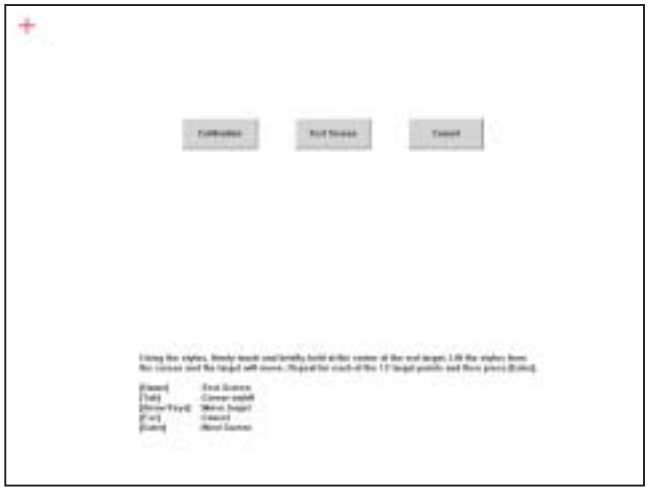
You can also launch this utility (calwin.exe) from Windows Explorer.
Following window will be displayed.

(1) The next calibration screen is displayed. ("+" is indicated)

(2) Press where "+" is displayed. If position pressed is correctable point, "+" will move to next position.

(3) Press [Enter] key after all twelve "+"s are pressed.

(4) Drawing test screen will be displayed when calibration is complete successfully.



(5) The key input for the calibration screen.

[Home]	Test Screen	Calibration is stopped, and changes to the drawing test screen.
[Tab]	Cursor on/off	A cursor in screen is turned ON or OFF.
[Arrow Keys]	Move target	"+" mark is moved to another position.
[Esc]	Cancel	Calibration is stopped, and calibration program will be terminated.
[Enter]	Next Screen	Creates calibration data, and changes to the drawing test screen.

(6) Drawing test screen
A drawing test screen is the test screen which can draw freely with input device.
By visually confirming pressing point and the displaying point, calibration result can be assured.
It will change to the drawing test screen in following cases.

∗When [Home] key was pressed in the calibration screen.

∗When [Enter] key was pressed and calibration data was updated.

(7) The key input for the drawing test screen.

[Home]	Calibration Screen	It changes to the calibration screen.
[Tab]	Cursor on/off	A cursor in screen is turned ON or OFF.
[Space Bar]	Clear Screen	A screen is cleared. A key guidance part goes up and down.
[Esc]	Cancel & Exit	Calibration is stopped, and calibration program will be terminated.
[Enter]	Save & Exit	Ends calibration program.

CHAPTER 7. CIRCUIT DIAGRAM

COVER PAGE

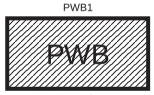
Table Of Contents

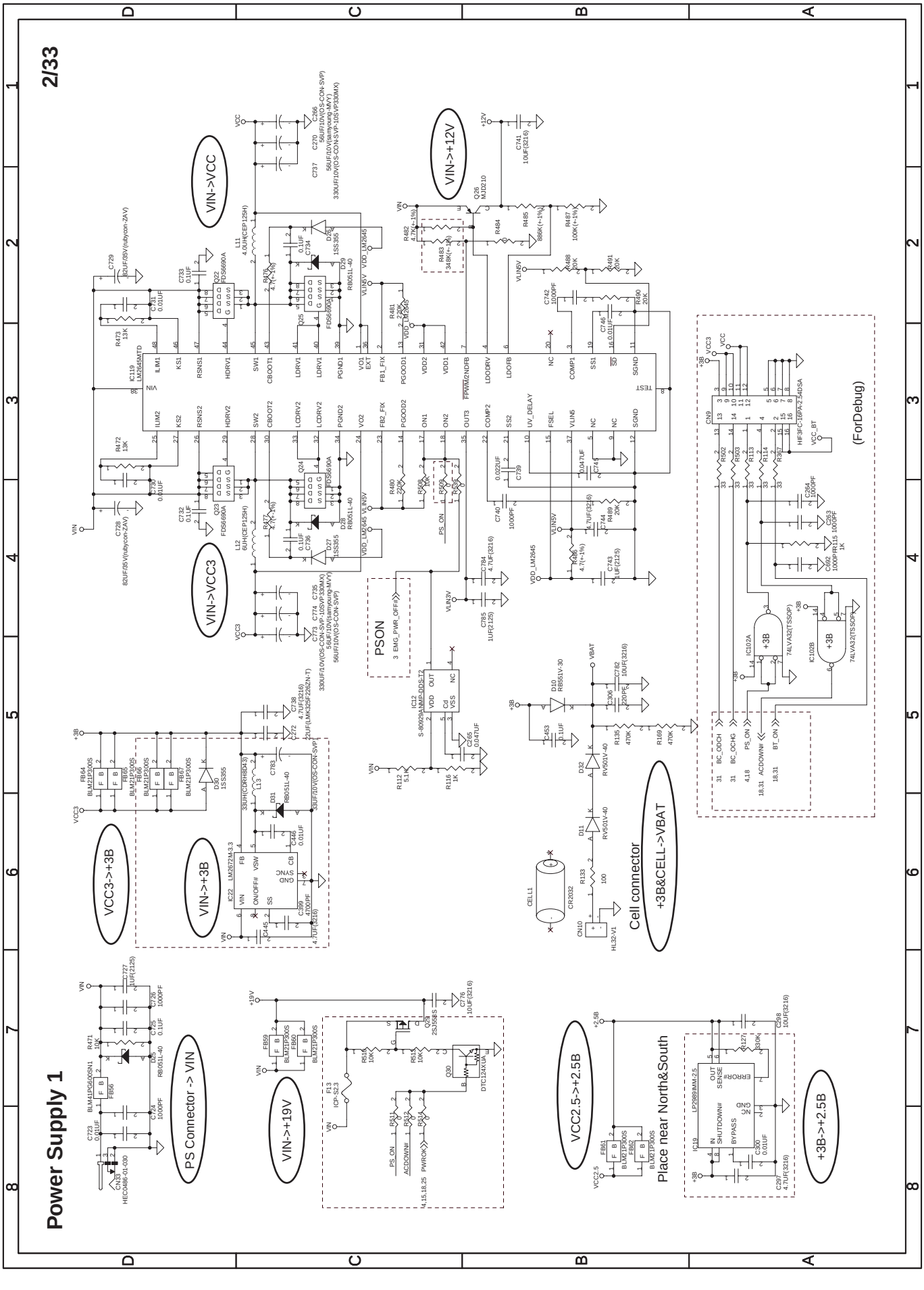
(01) Title Page
(02) Power Supply-1
(03) Power Supply-2
(04) Power Supply-3
(05) Clock Generator
(06) CPU-1
(07) CPU-2
(08) Power (North-South)
(09) CPU I/F (North-South)
(10) VLink I/F (North-South)
(11) PCI I/F (South)
(12) DDR I/F (South)
(13) DDR DIMM socket
(14) CRT I/F (North)
(15) LCD I/F (North)
(16) LPC-Xbus I/F (South-SIO)
(17) BIOS
(18) RTC-ACPI-GPIO (South)
(19) HDD I/F (South)
(20) USB-PS/2 I/F (South)
(21) LAN I/F (South)
(22) Sound I/F (South)
(23) COM I/F (SIO)
(24) Centro I/F (SIO)
(25) PCCARD PCI I/F
(26) PCCARD I/F
(27) Contactless Cerk I/F
(28) PCP3 ISA I/F
(29) PCP3 alarm-clerk-drawer I/F
(30) PCP3 MCR I/F
(31) BatteryContorller
(32) Connector
(33) tmp

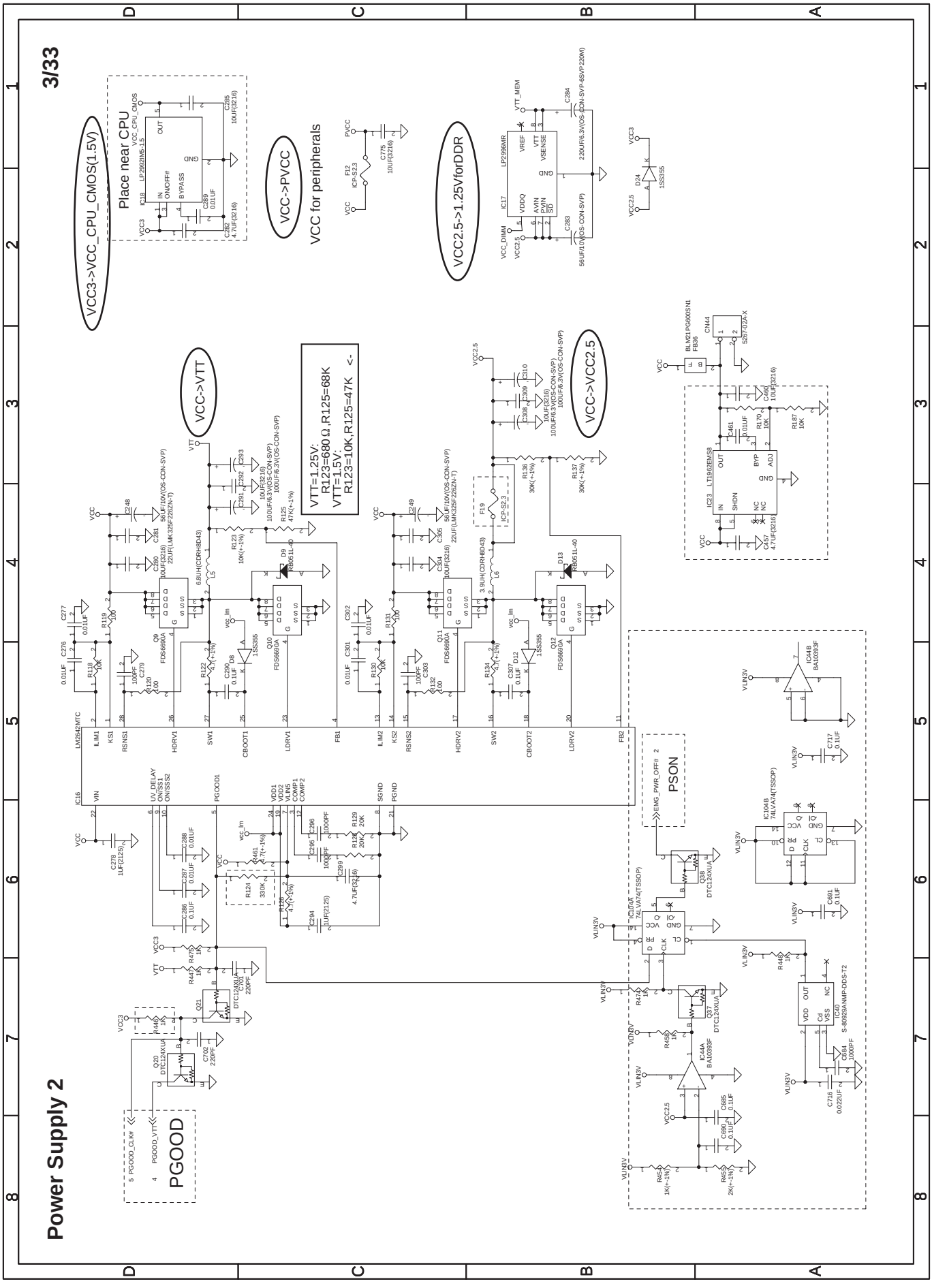
Parts Property

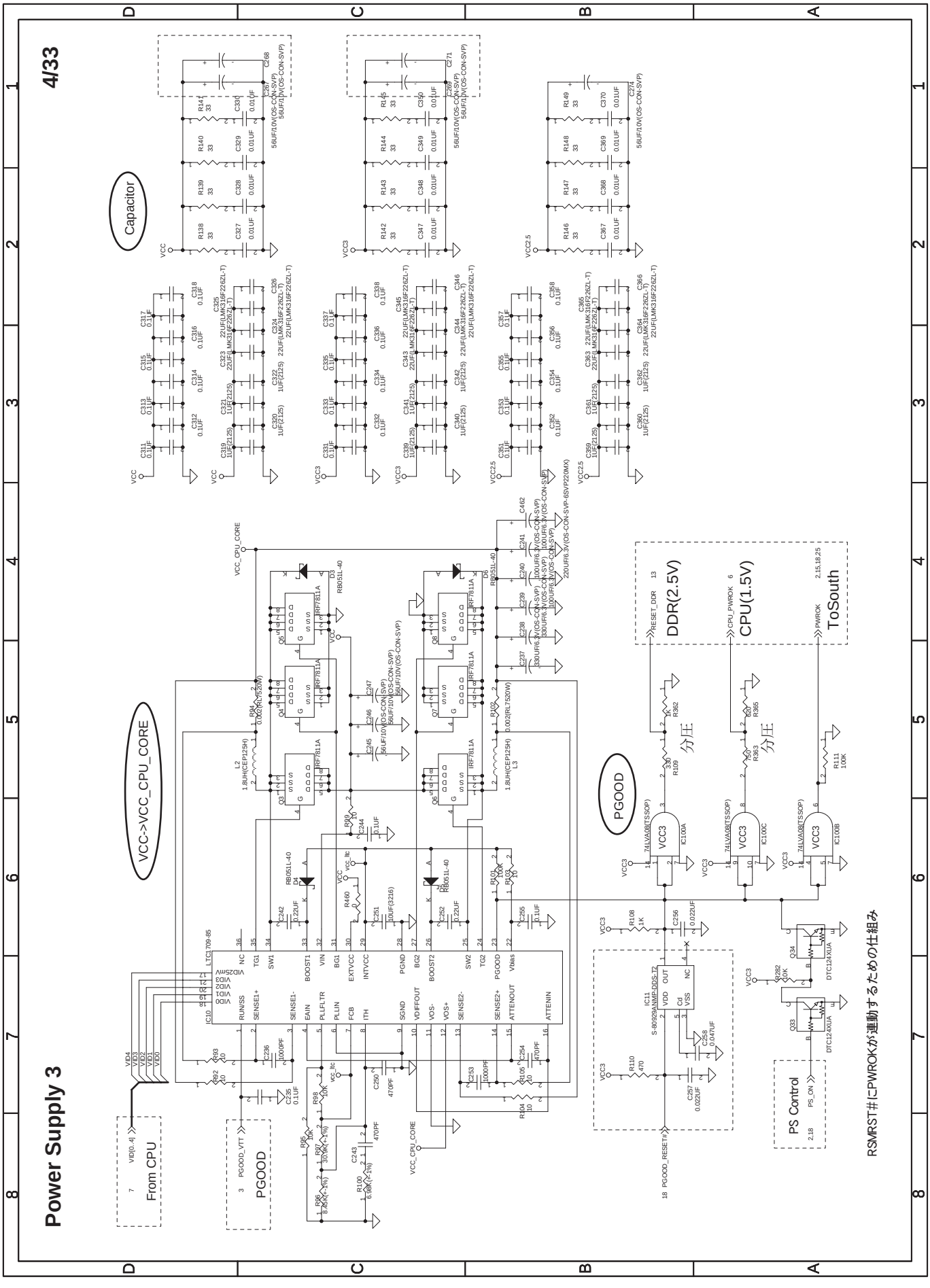
MOUNT blank or NOTMOUNT
CHANGE_LOG
explain

	page	X500 V	X500 U	X300 V	X300 U
HDD	19	O	O	X	X
CF	9	X	X	O	O
Pallarell	24	O	O	X	X
PCCARD	25, 26	O	O	X	X
ctless clerk	27	O	X	O	X
WMF clerk	29	O	X	O	X



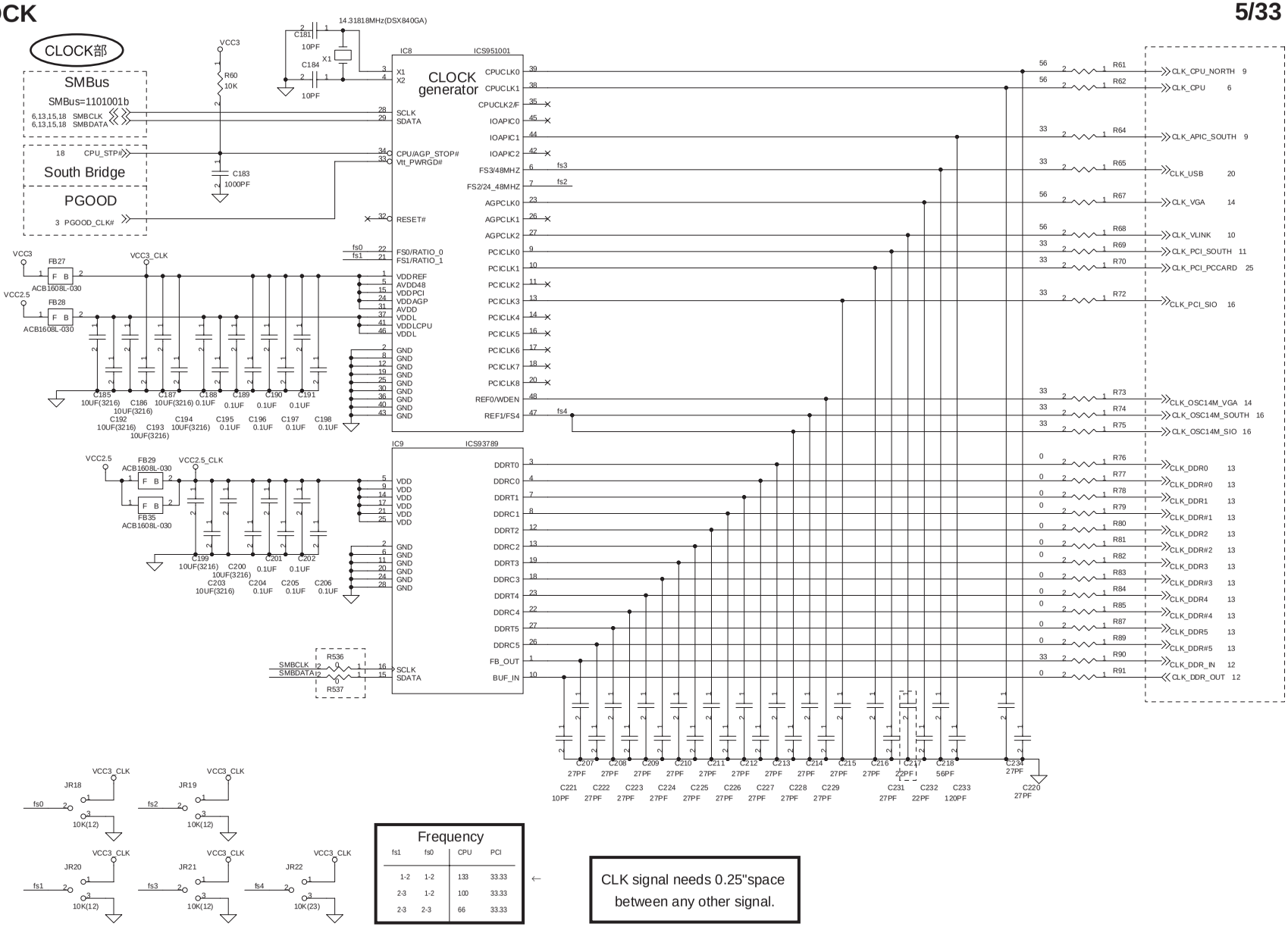

Power Supply 1
2/33
PS Connector -> VIN
VIN->+19V
VCC2.5->+2.5B
+3B->+2.5B
Place near North&South
VCC3->+3B
VIN->+3B
VIN->VCC3
VIN->VCC
VIN->+12V
PSON
+3B&CELL->VBAT
Cell connector
(ForDebug)

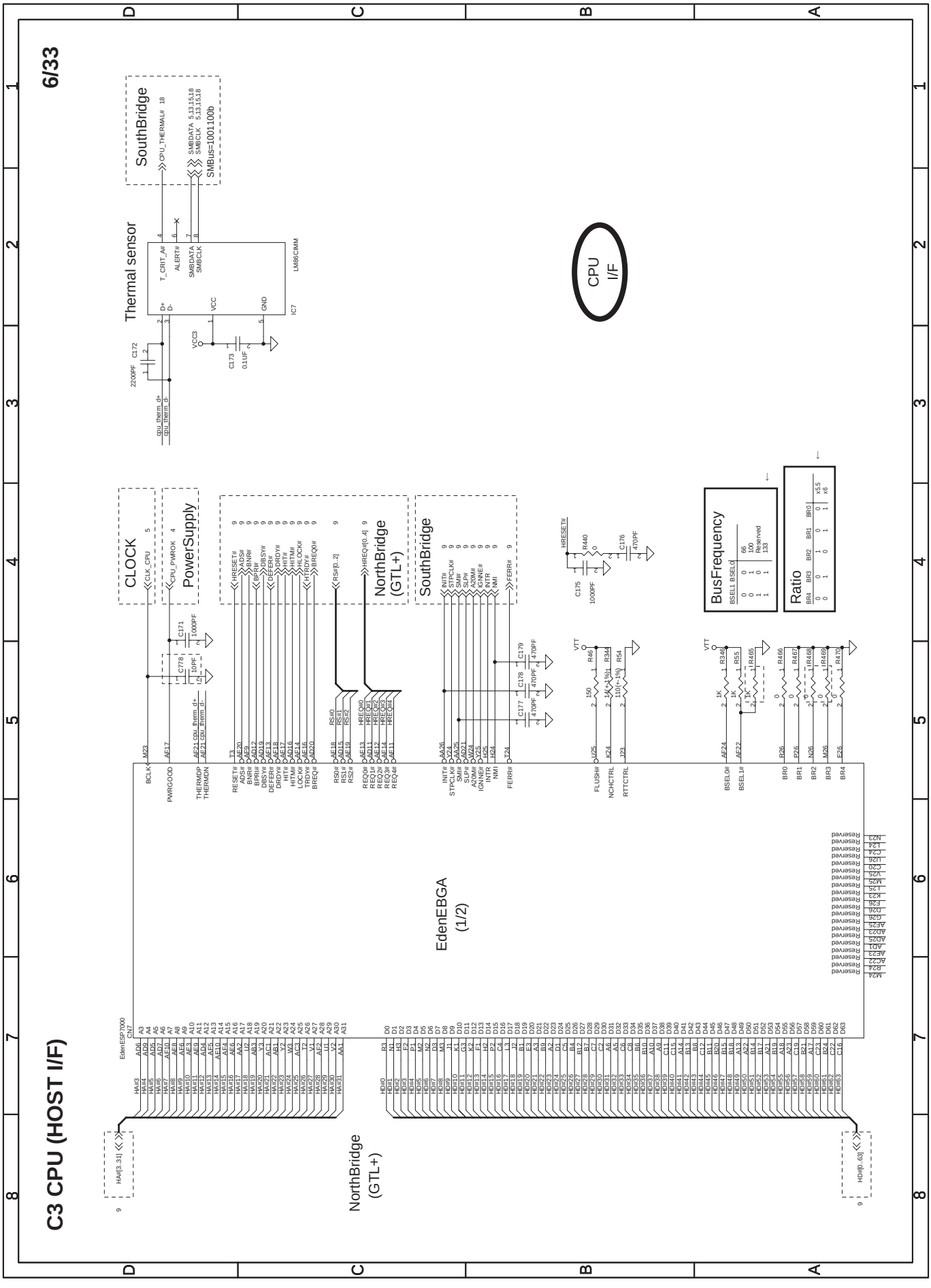

3/33
Power Supply 2
VCC3->VCC_CPU_CMOS(1.5V)
Place near CPU
VCC->PVCC
VCC for peripherals
VCC2.5->1.25VforDDR
VCC->VTT
VTT=1.25V:
R123=680Ω,R125=68K
VTT=1.5V:
R123=10K,R125=47K <-
VCC->VCC2.5
PSON
PGOOD
PGOOD_CLK#
PGOOD_VTT
VCC_CPU_CMOS
VCC_DIMM
VTT_MEM
LM2642MTC
LP2992IM5-1.5
LP2998IMR
LT1962EMS8
74LVA74(TSSOP)
74LVA74T(TSSOP)
S-80828AMP-DDS-T2
BA10393F
BA10358F
DTC124XUA
FDS6690A
1SS355
RB051L-40
56UF/10V(OS-CON-SVP)
100UF/6.3V(OS-CON-SVP)
220UF/6.3V(OS-CON-SVP)
22UF(LMK325F226ZN-T)
ZZUF(LMK325F226ZN-T)
6.8UH(CDRH8D43)
3.9UH(CDRH8D43)
10UF(3216)
4.7UF(3216)
VCC
VCC3
VCC2.5
VTT
VLIN3V
PVCC
VCC_IMM
VCC_DIMM
PGOOD_CLK#
PGOOD_VTT
PSON
VCC_CPU_CMOS
VTT_MEM


Power Supply 3
4/33
Capacitor
VCC->VCC_CPU_CORE
From CPU
PGOOD
PS Control
DDR(2.5V)
CPU(1.5V)
ToSouth
分压
RSMRST#にPWROKが連動するための仕組み

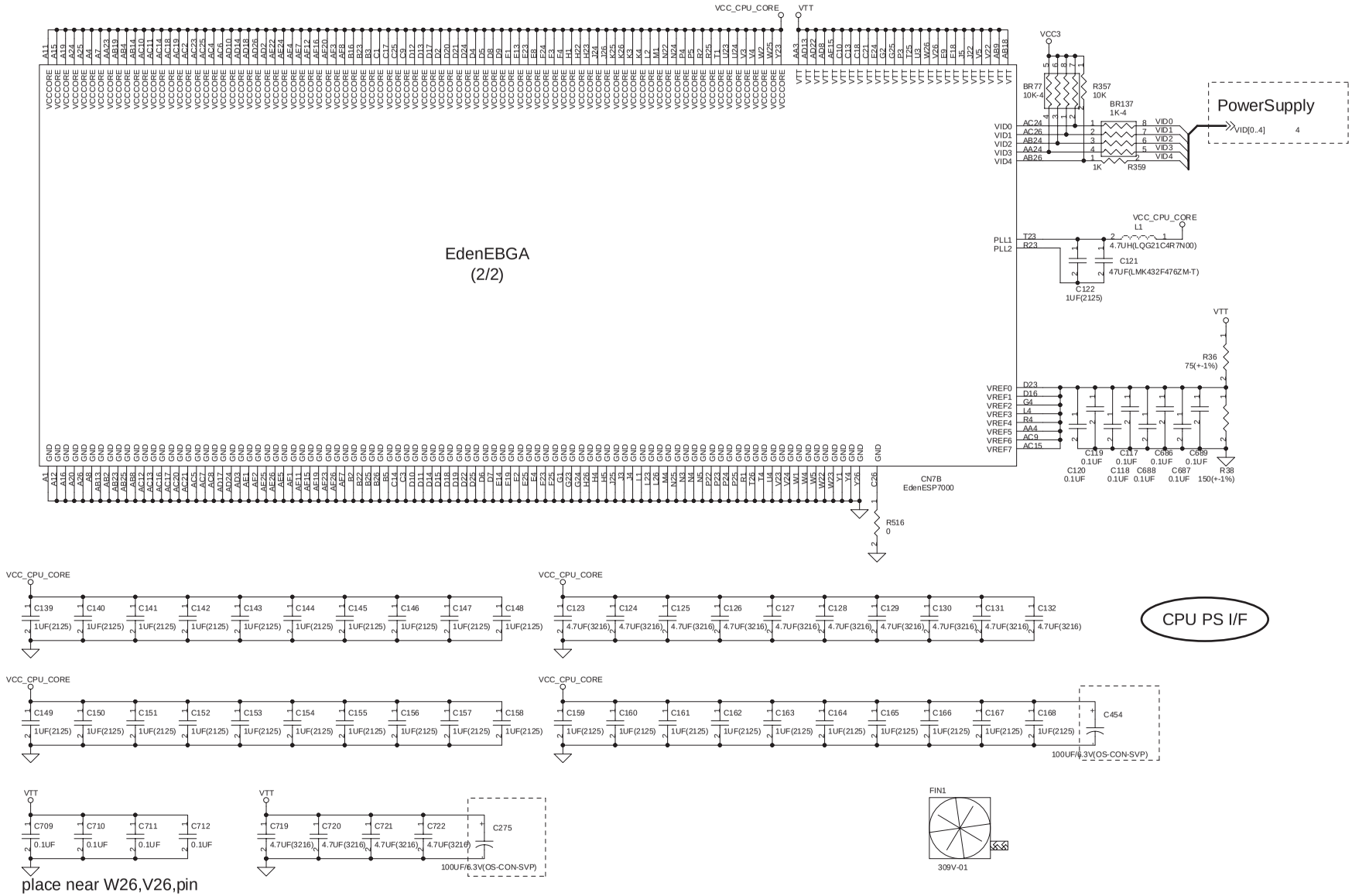
CLOCK

5/33

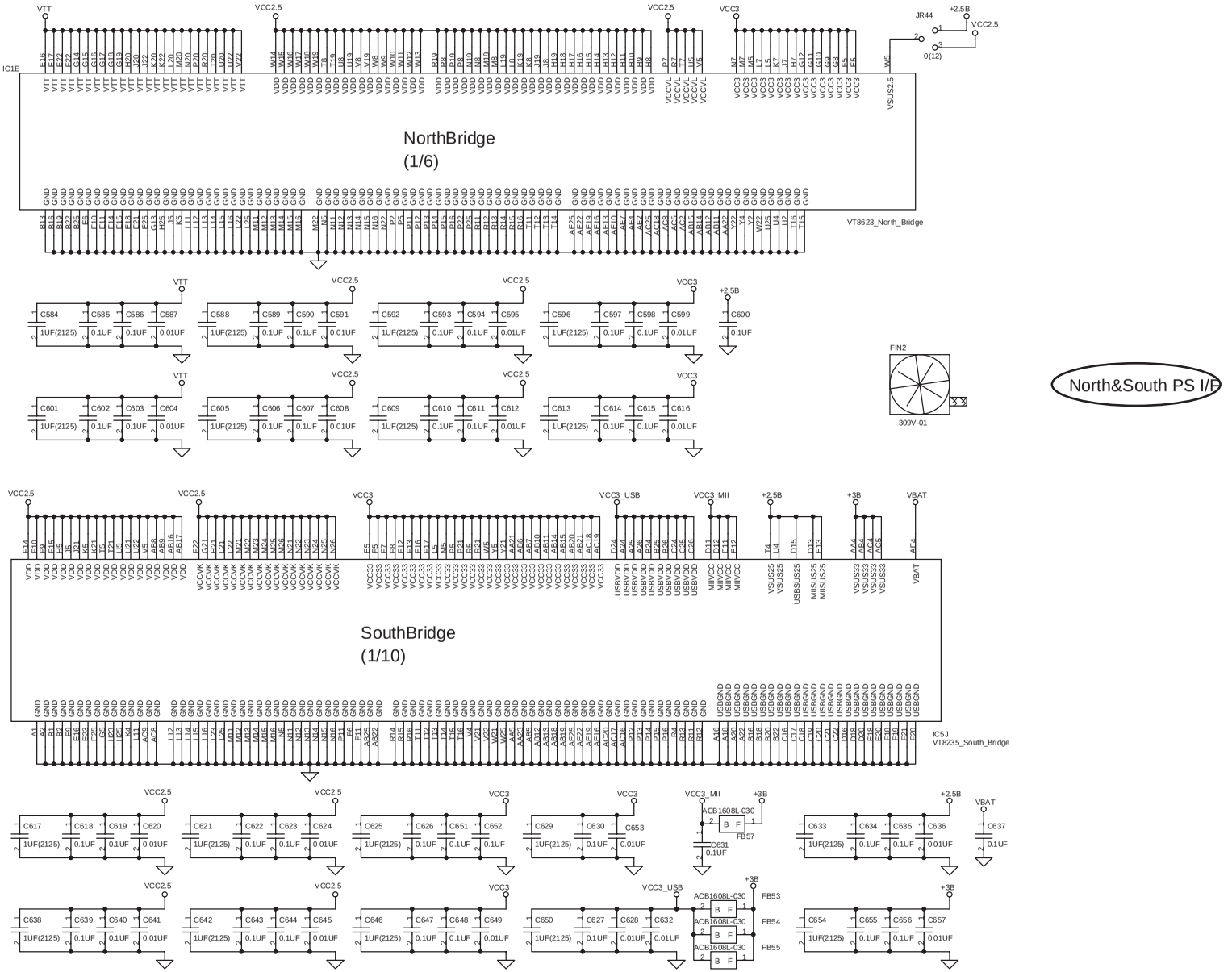

CLOCK部
SMBus
SMBus=1101001b
6,13,15,18 SMBCLK
6,13,15,18 SMBDATA
18 CPU_STP#
South Bridge
PGOOD
3 PGOOD_CLK#
14.31818MHz(DSX840GA)
C181 10PF
C184 10PF
X1
R60 10K
C183 1000PF
VCC3
IC8 ICS951001
CLOCK generator
X1
X2
SCLK
SDATA
CPU/AGP_STOP#
Vtt_PWRGD#
RESET#
FS0/RATIO_0
FS1/RATIO_1
CPUCLK0
CPUCLK1
CPUCLK2/F
IOAPIC0
IOAPIC1
IOAPIC2
FS3/48MHZ
FS2/24_48MHZ
AGPCLK0
AGPCLK1
AGPCLK2
PCICLK0
PCICLK1
PCICLK2
PCICLK3
PCICLK4
PCICLK5
PCICLK6
PCICLK7
PCICLK8
REF0/WDEN
REF1/FS4
VDDREF
AVDD48
VDDPCI
VDDAGP
AVDD
VDDL
VDDLCPU
VDDL
GND
VCC3_CLK
VCC2.5
FB27
FB28
ACB1608L-030
C185 10UF(3216)
C186 10UF(3216)
C187 10UF(3216)
C188 0.1UF
C189 0.1UF
C190 0.1UF
C191 0.1UF
C192 10UF(3216)
C193 10UF(3216)
C194 10UF(3216)
C195 0.1UF
C196 0.1UF
C197 0.1UF
C198 0.1UF
IC9 ICS93789
VCC2.5_CLK
FB29
FB35
C199 10UF(3216)
C200 10UF(3216)
C201 0.1UF
C202 0.1UF
C203 10UF(3216)
C204 0.1UF
C205 0.1UF
C206 0.1UF
VDD
GND
R536
R537
SMBCLK
SMBDATA
SCLK
SDATA
DDRT0
DDRC0
DDRT1
DDRC1
DDRT2
DDRC2
DDRT3
DDRC3
DDRT4
DDRC4
DDRT5
DDRC5
FB_OUT
BUF_IN
C207 27PF
C208 27PF
C209 27PF
C210 27PF
C211 27PF
C212 27PF
C213 27PF
C214 27PF
C215 27PF
C216 27PF
C217 22PF
C218 56PF
C234 27PF
C220 27PF
C221 10PF
C222 27PF
C223 27PF
C224 27PF
C225 27PF
C226 27PF
C227 27PF
C228 27PF
C229 27PF
C231 27PF
C232 22PF
C233 120PF
R61 CLK_CPU_NORTH 9
R62 CLK_CPU 6
R64 CLK_APIC_SOUTH 9
R65 CLK_USB 20
R67 CLK_VGA 14
R68 CLK_VLINK 10
R69 CLK_PCI_SOUTH 11
R70 CLK_PCI_PCCARD 25
R72 CLK_PCI_SIO 16
R73 CLK_OSC14M_VGA 14
R74 CLK_OSC14M_SOUTH 16
R75 CLK_OSC14M_SIO 16
R76 CLK_DDR0 13
R77 CLK_DDR#0 13
R78 CLK_DDR1 13
R79 CLK_DDR#1 13
R80 CLK_DDR2 13
R81 CLK_DDR#2 13
R82 CLK_DDR3 13
R83 CLK_DDR#3 13
R84 CLK_DDR4 13
R85 CLK_DDR#4 13
R87 CLK_DDR5 13
R89 CLK_DDR#5 13
R90 CLK_DDR_IN 12
R91 CLK_DDR_OUT 12
JR18 10K(12)
JR19 10K(12)
JR20 10K(12)
JR21 10K(12)
JR22 10K(23)
Frequency
fs1 fs0 CPU PCI
1-2 1-2 133 33.33
2-3 1-2 100 33.33
2-3 2-3 66 33.33
CLK signal needs 0.25"space between any other signal.


C3 CPU (HOST I/F)
6/33
CPU I/F
EdenEBGA (1/2)
NorthBridge (GTL+)
CLOCK
PowerSupply
NorthBridge (GTL+)
SouthBridge
Thermal sensor
SouthBridge
BusFrequency
Ratio
SMBus=1001100b

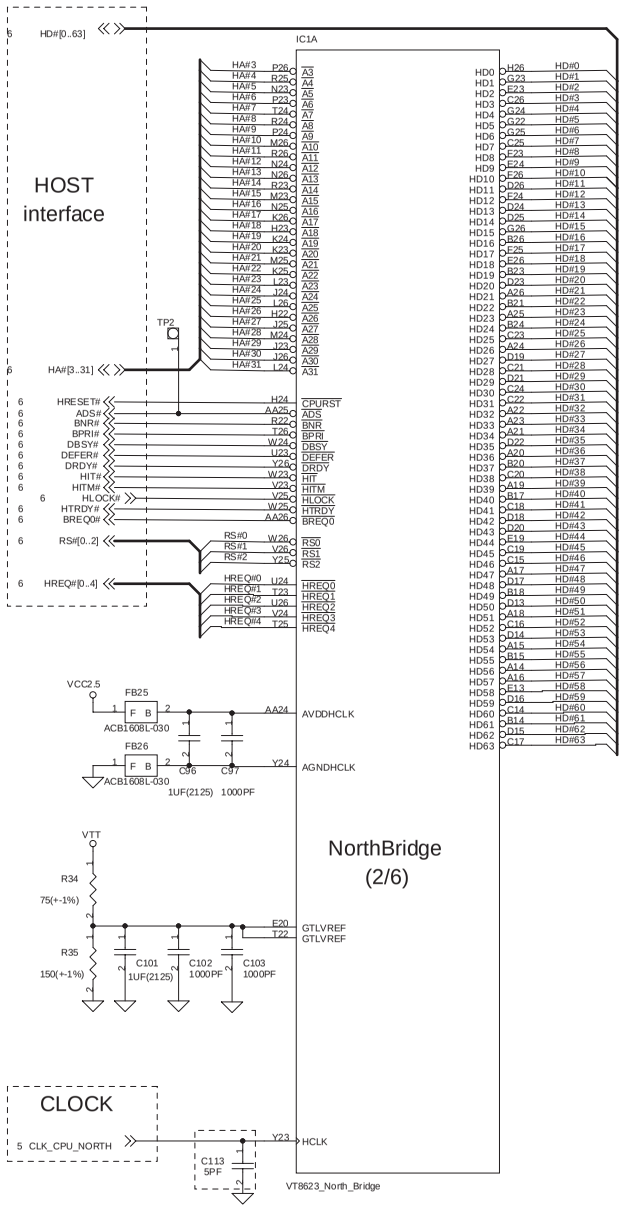
C3 CPU (Power I/F)

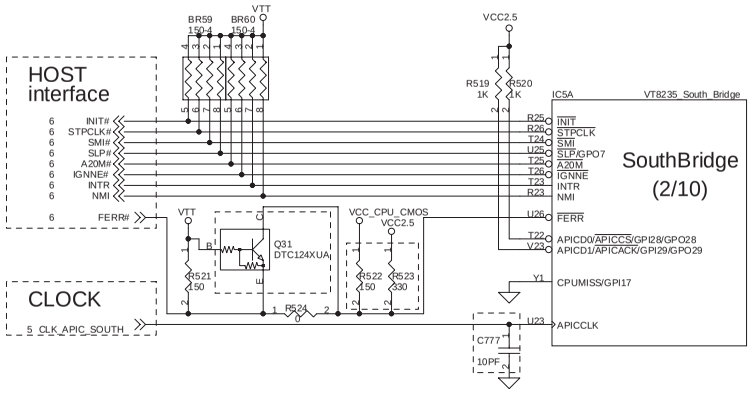


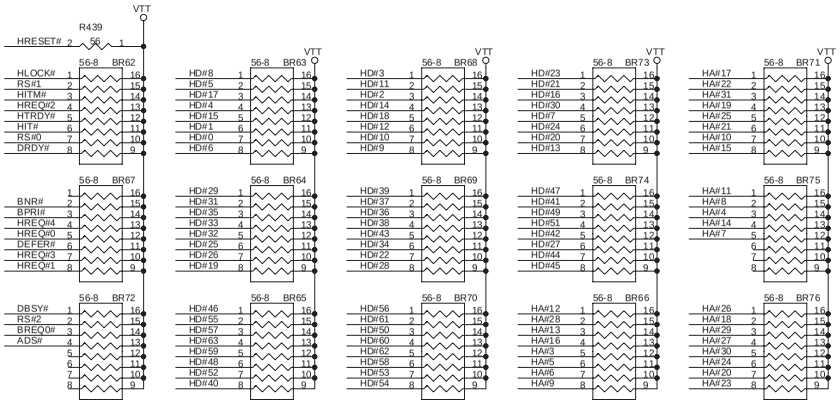
North & South POWER I/F

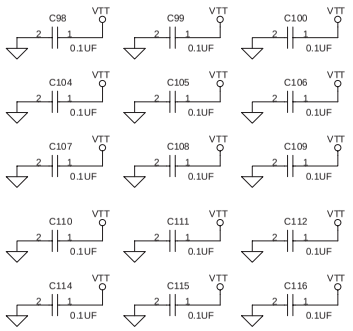


North & South CPU I/F





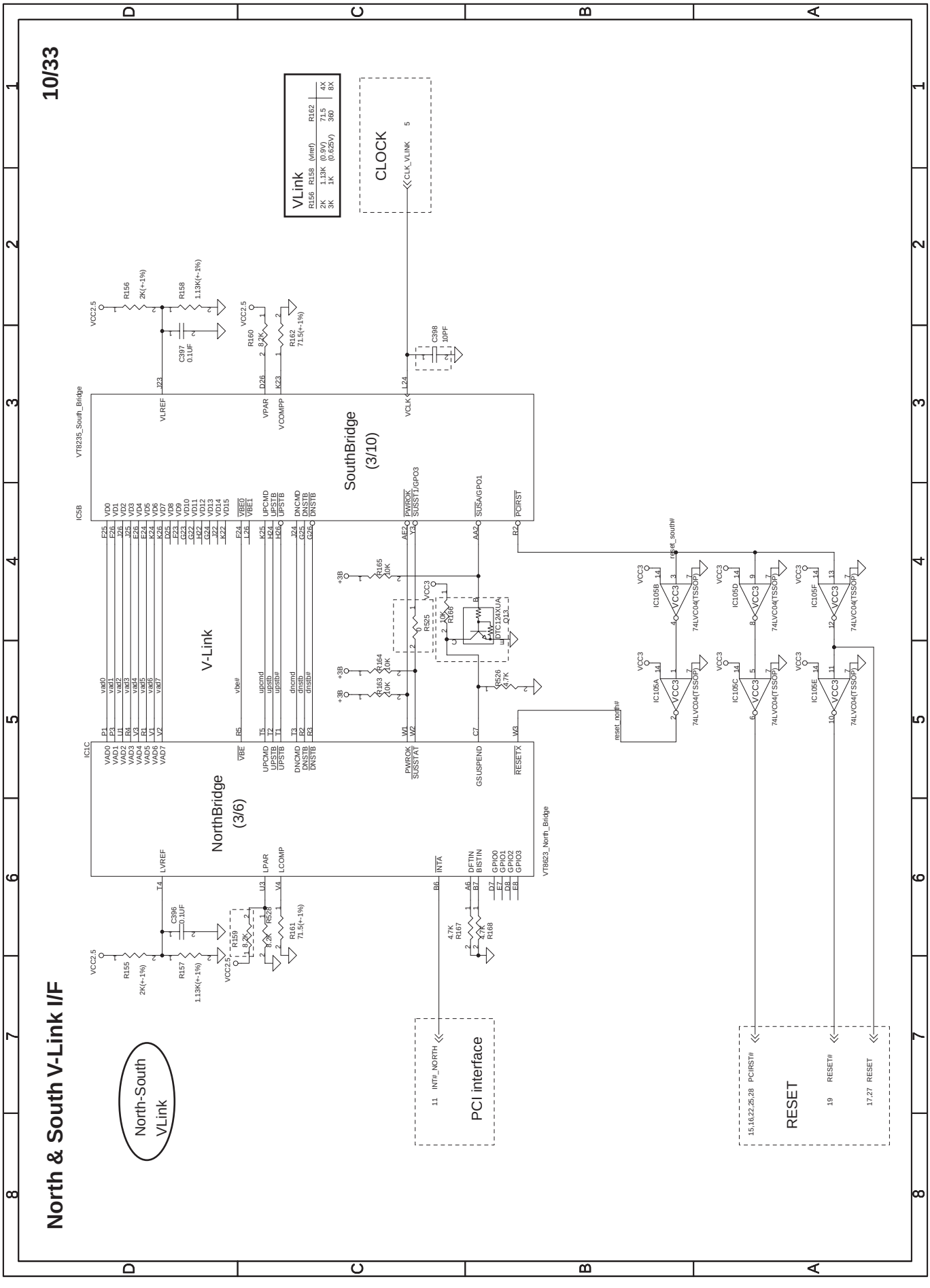


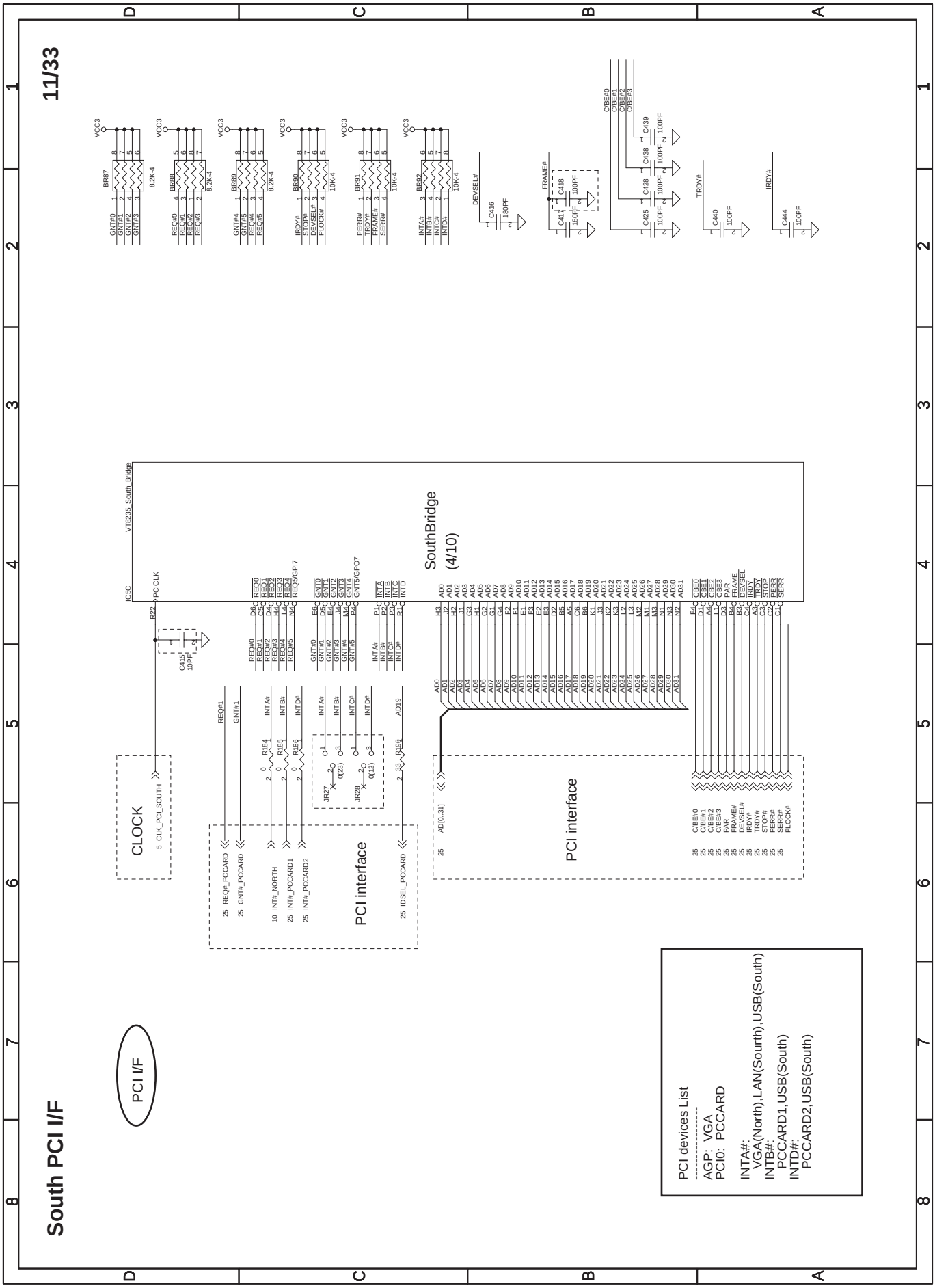


BRをsocket370の外側に並べて配置し、
さらにその周りにVTTplaneを作り、
pull-up。
capacitorをBR1個おきに間に配置

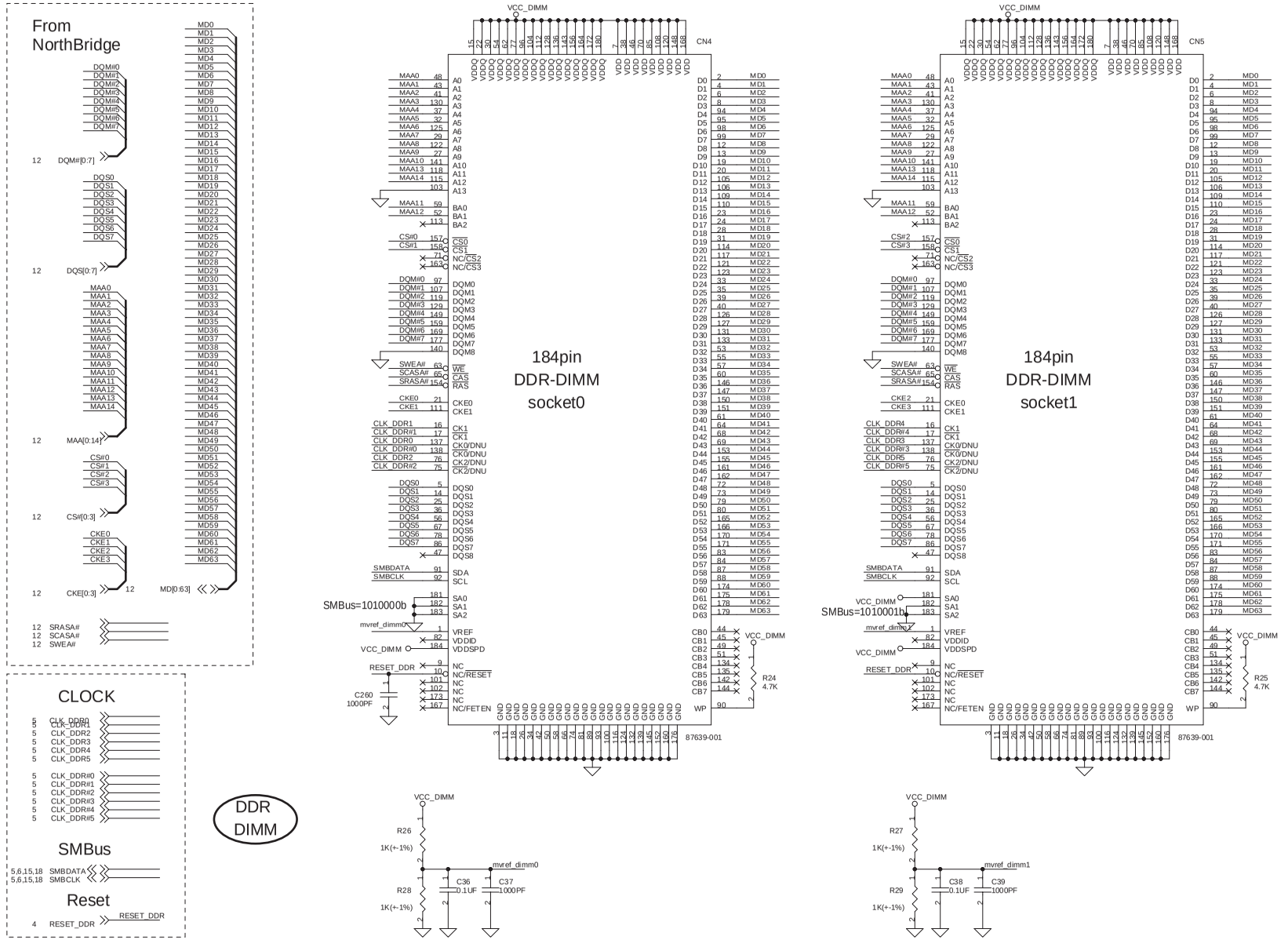
GTL+
termination
registors

North&South CPU I/F

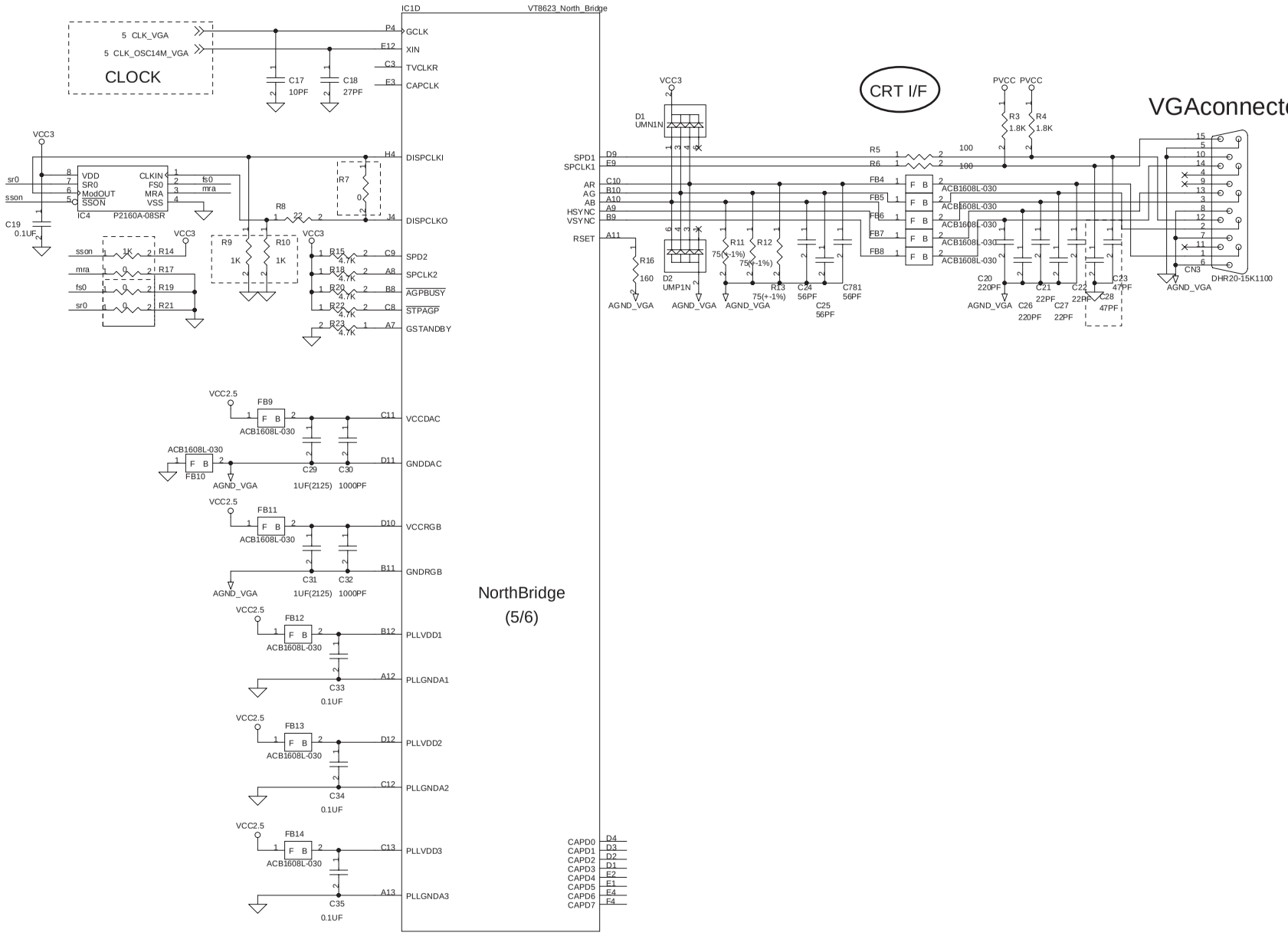

10/33
North & South V-Link I/F
North-South VLink
NorthBridge (3/6)
V-Link
SouthBridge (3/10)
VT8623_North_Bridge
VT8235_South_Bridge
PCI interface
INT#_NORTH
CLOCK
CLK_VLINK
RESET
PCIRST#
RESET#
VLink
reset_north#
reset_south#
74LVC04(TSSOP)


11/33
South PCI I/F
PCI I/F
PCI devices List
AGP: VGA
PCI0: PCCARD
INTA#:
VGA(North),LAN(Sourth),USB(South)
INTB#:
PCCARD1,USB(South)
INTD#:
PCCARD2,USB(South)
CLOCK
PCI interface
SouthBridge
(4/10)
VT8235 South Bridge
PCICLK
REQ#1
GNT#1
INT A#
INT B#
INT D#
INT C#
IDSEL_PCCARD
AD19
REQ_PCCARD
GNT#_PCCARD
INT#_NORTH
INT#_PCCARD1
INT#_PCCARD2
AD[0..31]
C/BE#0
C/BE#1
C/BE#2
C/BE#3
PAR
FRAME#
DEVSEL#
IRDY#
TRDY#
STOP#
PERR#
SERR#
PLOCK#
R184
R185
R186
R189
JR27
JR28
C415
10PF
C416
180PF
C418
180PF
C425
C428
C438
C439
100PF
C440
C444
BR87
BR88
BR89
BR90
BR91
BR92
8.2K-4
10K-4
VCC3
FRAME#
TRDY#
IRDY#
DEVSEL#

DDR-Memory DIMM socket



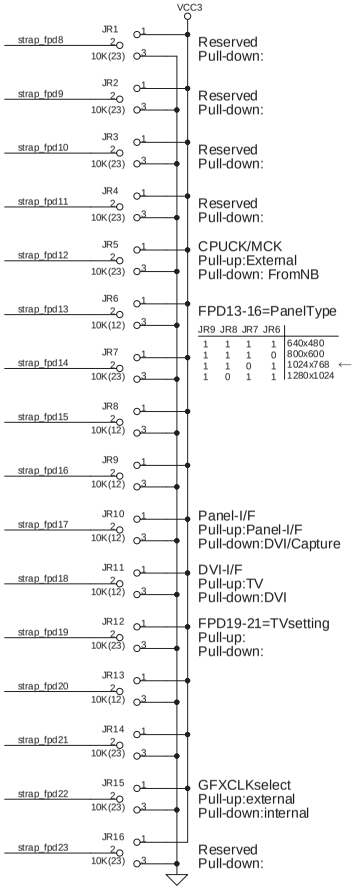
North CRT I/F


IC1D
VT8623_North_Bridge
5 CLK_VGA
5 CLK_OSC14M_VGA
CLOCK
C17 10PF
C18 27PF
P4 GCLK
E12 XIN
C3 TVCLKR
E3 CAPCLK
VCC3
IC4 P2160A-08SR
VDD SR0 ModOUT SSON
CLKIN FS0 MRA VSS
sr0
sson
fs0
mra
C19 0.1UF
H4 DISPCLKI
J4 DISPCLKO
R7 0
R8 22
R9 1K
R10 1K
R14 1K
R17 0
R19 0
R21 0
R15 4.7K
R18 4.7K
R20 4.7K
R22 4.7K
R23 4.7K
C9 SPD2
A8 SPCLK2
B8 AGPBUSY
C8 STPAGP
A7 GSTANDBY
VCC2.5
FB9 ACB1608L-030
C11 VCCDAC
FB10 ACB1608L-030
D11 GNDDAC
AGND_VGA
C29 1UF(2125)
C30 1000PF
FB11 ACB1608L-030
D10 VCCRGB
C31 1UF(2125)
C32 1000PF
FB12 ACB1608L-030
B12 PLLVDD1
C33 0.1UF
A12 PLLGNDA1
FB13 ACB1608L-030
D12 PLLVDD2
C34 0.1UF
C12 PLLGNDA2
FB14 ACB1608L-030
C13 PLLVDD3
C35 0.1UF
A13 PLLGNDA3
NorthBridge
(5/6)
CAPD0 D4
CAPD1 D3
CAPD2 D2
CAPD3 D1
CAPD4 E2
CAPD5 E1
CAPD6 F4
CAPD7 F4
CRT I/F
VGAconnector
D1 UMN1N
D2 UMP1N
SPD1 D9
SPCLK1 E9
AR C10
AG B10
AB A10
HSYNC A9
VSYNC B9
RSET A11
R16 160
R11 75(+-1%)
R12 75(+-1%)
R13 75(+-1%)
C24 56PF
C25 56PF
C781 56PF
R5 100
R6 100
FB4 ACB1608L-030
FB5 ACB1608L-030
FB6 ACB1608L-030
FB7 ACB1608L-030
FB8 ACB1608L-030
PVCC PVCC
R3 1.8K
R4 1.8K
C20 220PF
C26 220PF
C21 22PF
C27 22PF
C22 22PF
C28 47PF
C23 47PF
CN3 DHR20-15K1100
AGND_VGA

North LCD I/F

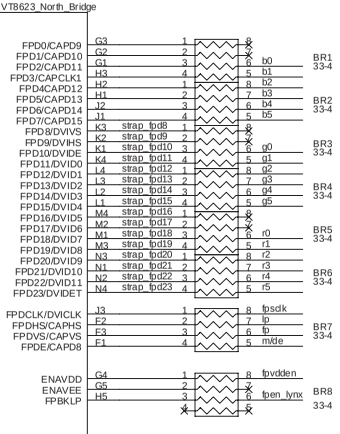
15/33

NorthBridge Hardware Configuration


VCC3
JR1 strap_fpd8 10K(23) Reserved Pull-down:
JR2 strap_fpd9 10K(23) Reserved Pull-down:
JR3 strap_fpd10 10K(23) Reserved Pull-down:
JR4 strap_fpd11 10K(23) Reserved Pull-down:
JR5 strap_fpd12 10K(23) CPUCK/MCK Pull-up:External Pull-down: FromNB
JR6 strap_fpd13 10K(12) FPD13-16=PanelType
JR9 JR8 JR7 JR6
1 1 1 1 640x480
1 1 1 0 800x600
1 1 0 1 1024x768 ←
1 0 1 1 1280x1024
JR7 strap_fpd14 10K(23)
JR8 strap_fpd15 10K(12)
JR9 strap_fpd16 10K(12)
JR10 strap_fpd17 10K(12) Panel-I/F Pull-up:Panel-I/F Pull-down:DVI/Capture
JR11 strap_fpd18 10K(12) DVI-I/F Pull-up:TV Pull-down:DVI
JR12 strap_fpd19 10K(23) FPD19-21=TVsetting Pull-up: Pull-down:
JR13 strap_fpd20 10K(12)
JR14 strap_fpd21 10K(23)
JR15 strap_fpd22 10K(23) GFXCLKselect Pull-up:external Pull-down:internal
JR16 strap_fpd23 10K(23) Reserved Pull-down:

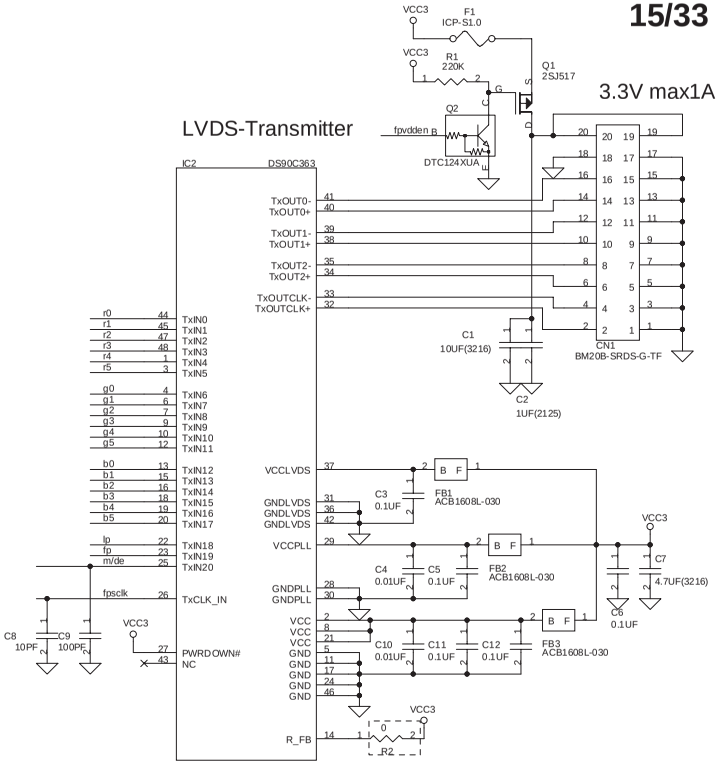
LCD I/F

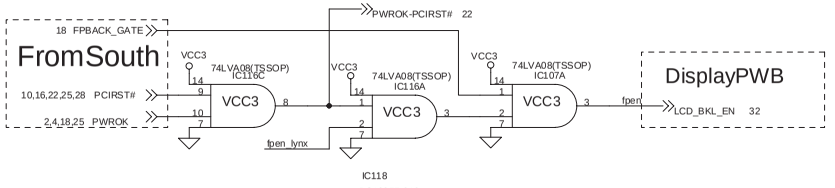
IC1F VT823_North_Bridge

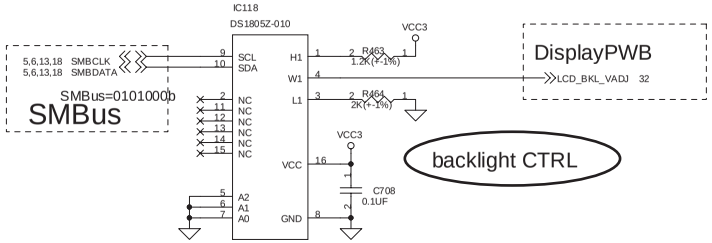

FPD0/CAPD9 FPD1/CAPD10 FPD2/CAPD11 FPD3/CAPCLK1 FPD4CAPD12 FPD5/CAPD13 FPD6/CAPD14 FPD7/CAPD15
FPD8/DVIVS FPD9/DVIHS FPD10/DVIDE FPD11/DVID0 FPD12/DVID1 FPD13/DVID2 FPD14/DVID3 FPD15/DVID4 FPD16/DVID5 FPD17/DVID6 FPD18/DVID7 FPD19/DVID8 FPD20/DVID9 FPD21/DVID10 FPD22/DVID11 FPD23/DVIDET
strap_fpd8 strap_fpd9 strap_fpd10 strap_fpd11 strap_fpd12 strap_fpd13 strap_fpd14 strap_fpd15 strap_fpd16 strap_fpd17 strap_fpd18 strap_fpd19 strap_fpd20 strap_fpd21 strap_fpd22 strap_fpd23
b0 b1 b2 b3 b4 b5 g0 g1 g2 g3 g4 g5 r0 r1 r2 r3 r4 r5
BR1 33-4 BR2 33-4 BR3 33-4 BR4 33-4 BR5 33-4 BR6 33-4 BR7 33-4 BR8 33-4
FPDCLK/DVICLK FPDHS/CAPHS FPDVS/CAPVS FPDE/CAPD8
fpsclk lp fp m/de
ENAVDD ENAVEE FPBKLP
fpvdden tpen_lynx
TVD0/DVID0 TVD1/DVID1 TVD2/DVID2 TVD3/DVID3 TVD4/DVID4 TVD5/DVID5 TVD6/DVID6 TVD7/DVID7 TVD8/DVID8 TVD9/DVID9 TVD10/DVID10 TVD11/DVID11
TVCLK/DVICLK TVVS/DVIVS TVHS/DVIHS TVBL#/DVIDE
DVIDET C1 0 R462

NorthBridge (6/6)

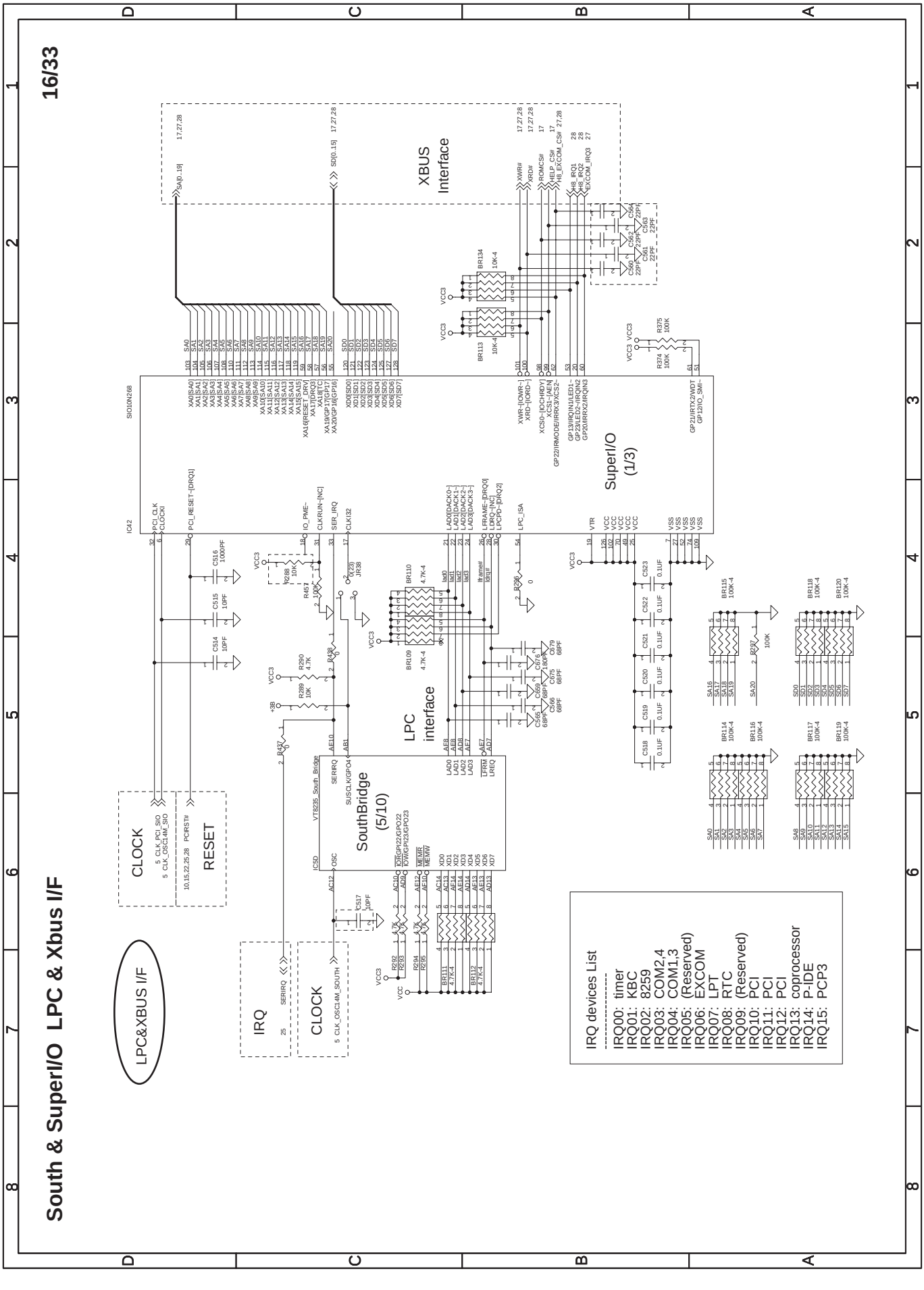
LVDS-Transmitter


VCC3 F1 ICP-S1.0
R1 220K Q1 2SJ517 3.3V max1A
Q2 DTC124XUA fpvdden_B
IC2 DS90C363
TxOUT0- TxOUT0+ TxOUT1- TxOUT1+ TxOUT2- TxOUT2+ TxOUTCLK- TxOUTCLK+
CN1 BM20B-SRDS-G-TF
C1 10UF(3216) C2 1UF(2125)
TxIN0 TxIN1 TxIN2 TxIN3 TxIN4 TxIN5 TxIN6 TxIN7 TxIN8 TxIN9 TxIN10 TxIN11 TxIN12 TxIN13 TxIN14 TxIN15 TxIN16 TxIN17 TxIN18 TxIN19 TxIN20
TxCLK_IN PWRDOWN# NC
VCCLVDS GNDLVDS VCCPLL GNDPLL VCC GND R_FB
FB1 ACB1608L-030 FB2 ACB1608L-030 FB3 ACB1608L-030
C3 0.1UF C4 0.01UF C5 0.1UF C6 0.1UF C7 4.7UF(3216) C8 10PF C9 100PF C10 0.01UF C11 0.1UF C12 0.1UF
R2





place near displayPWB-CN


16/33
South & SuperI/O LPC & Xbus I/F
LPC&XBUS I/F
CLOCK
RESET
IRQ
CLOCK
SouthBridge (5/10)
LPC interface
XBUS Interface
SuperI/O (1/3)
IRQ devices List
IRQ00: timer
IRQ01: KBC
IRQ02: 8259
IRQ03: COM2,4
IRQ04: COM1,3
IRQ05: (Reserved)
IRQ06: EXCOM
IRQ07: LPT
IRQ08: RTC
IRQ09: (Reserved)
IRQ10: PCI
IRQ11: PCI
IRQ12: PCI
IRQ13: coprocessor
IRQ14: P-IDE
IRQ15: PCP3

BIOS

BIOS

XBUS interface

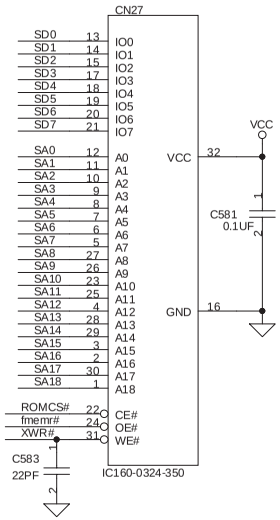
16,27,28 SA[0..19]
SA0 SA1 SA2 SA3 SA4 SA5 SA6 SA7 SA8 SA9 SA10 SA11 SA12 SA13 SA14 SA15 SA16 SA17 SA18 SA19

16,27,28 SD[0..15]
SD0 SD1 SD2 SD3 SD4 SD5 SD6 SD7

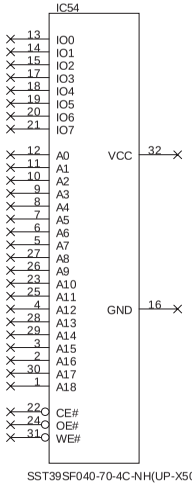
16,27,28 XRD#
16,27,28 XWR#
16 ROMCS#
10,27 RESET
16 HELP_CS#

IOaddress=0x80-0x81

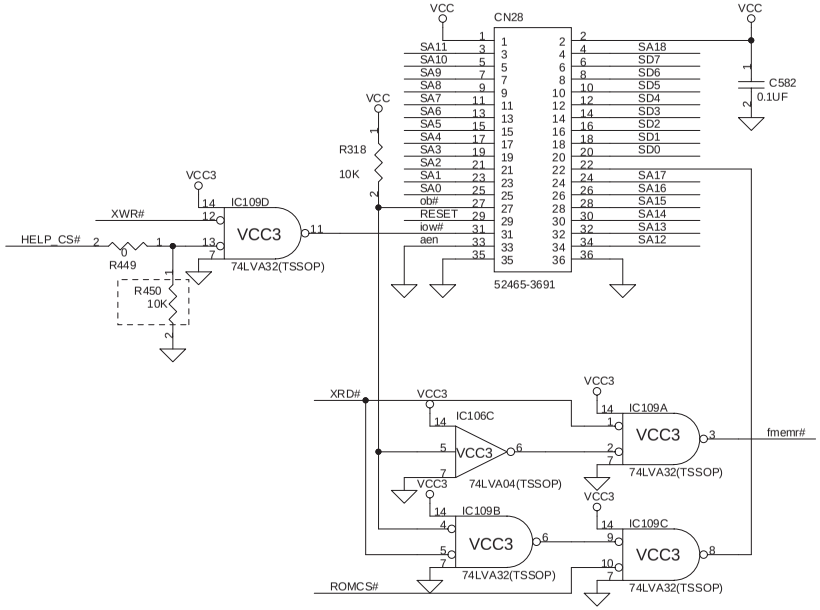
FLASH socket



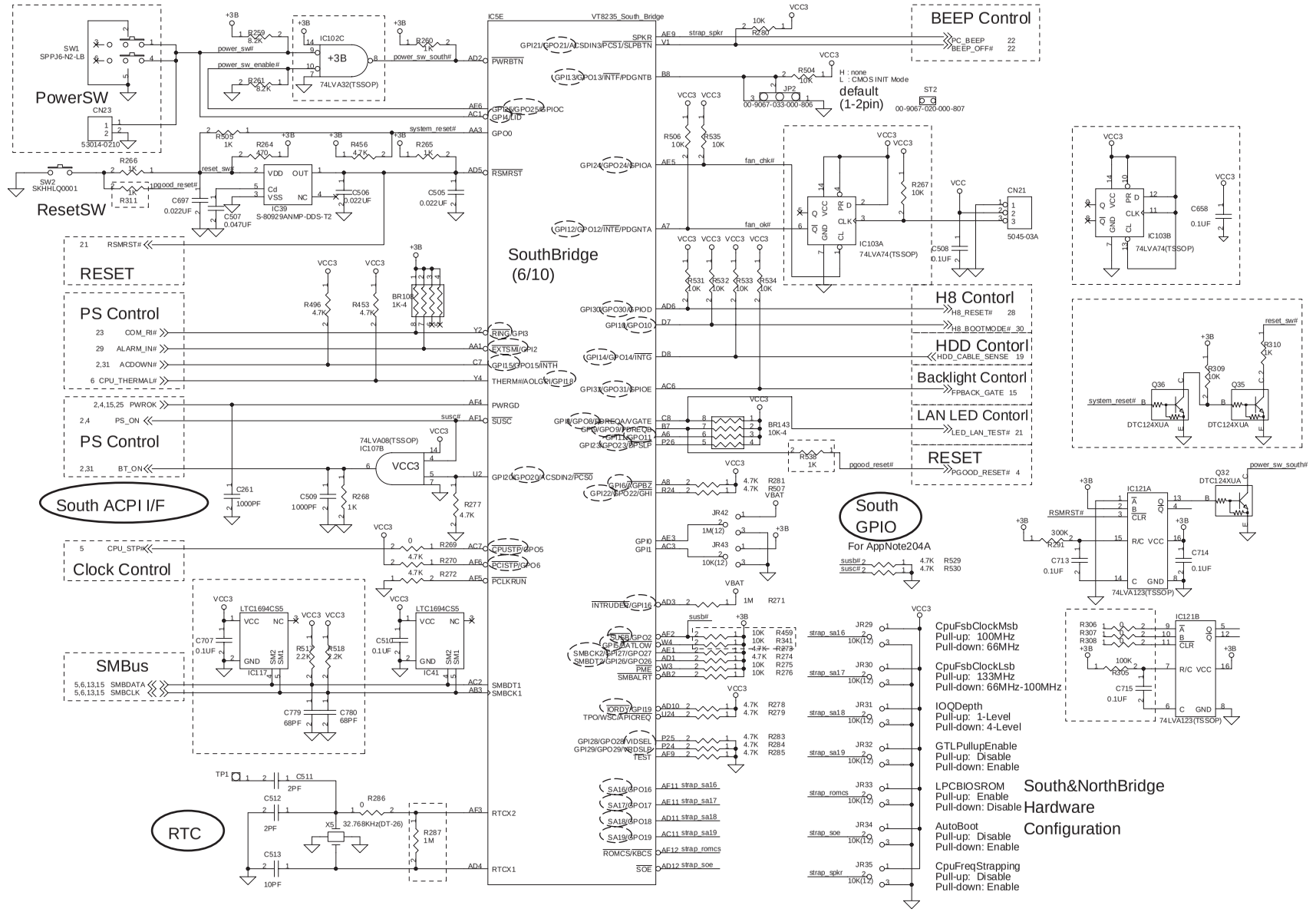
FLASH ROM
(socketに実装)

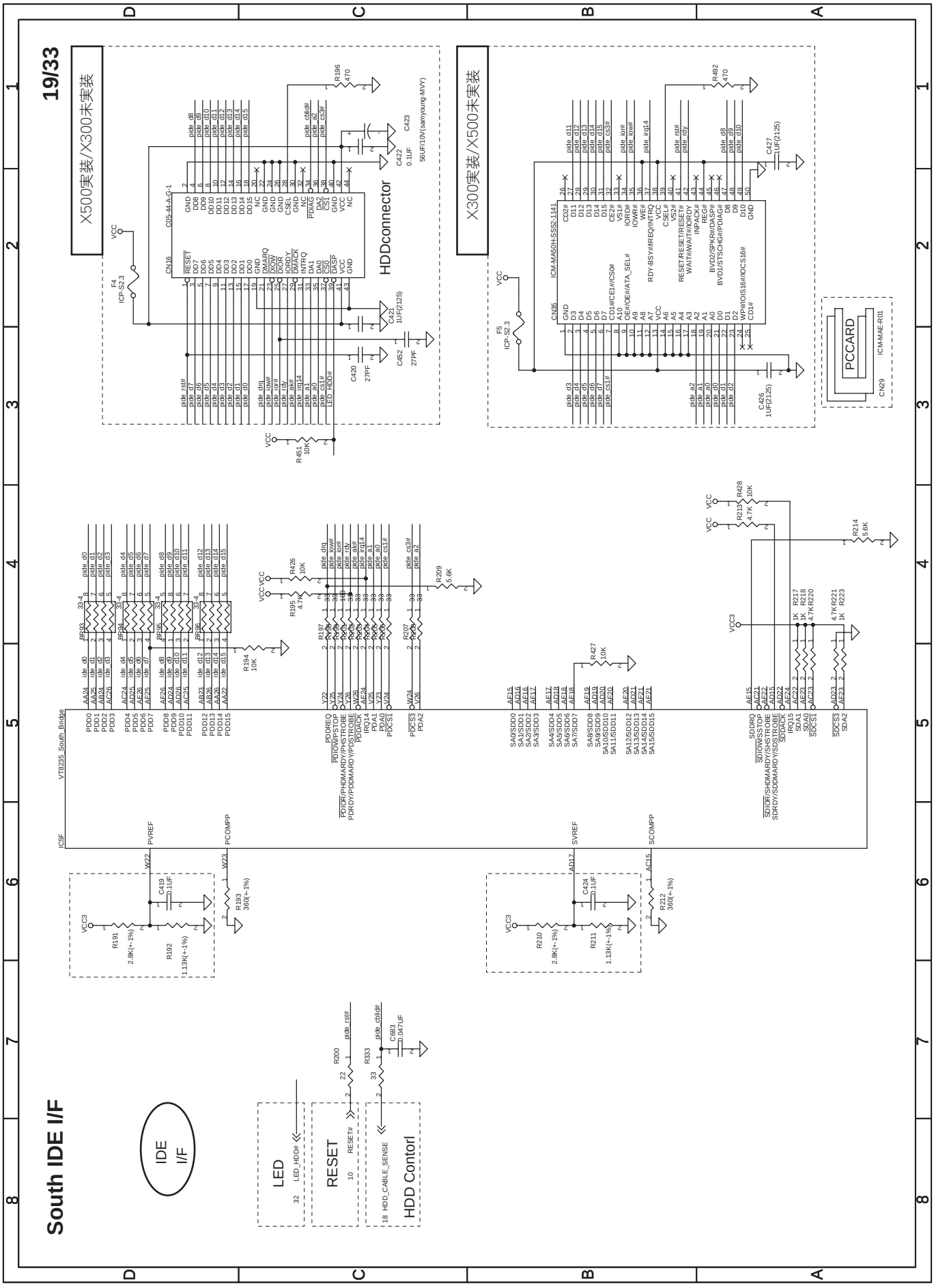

IC54
IO0 IO1 IO2 IO3 IO4 IO5 IO6 IO7
A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 A16 A17 A18
VCC 32
GND 16
CE# OE# WE#
SST39SF040-70-4C-NH(UP-X500)

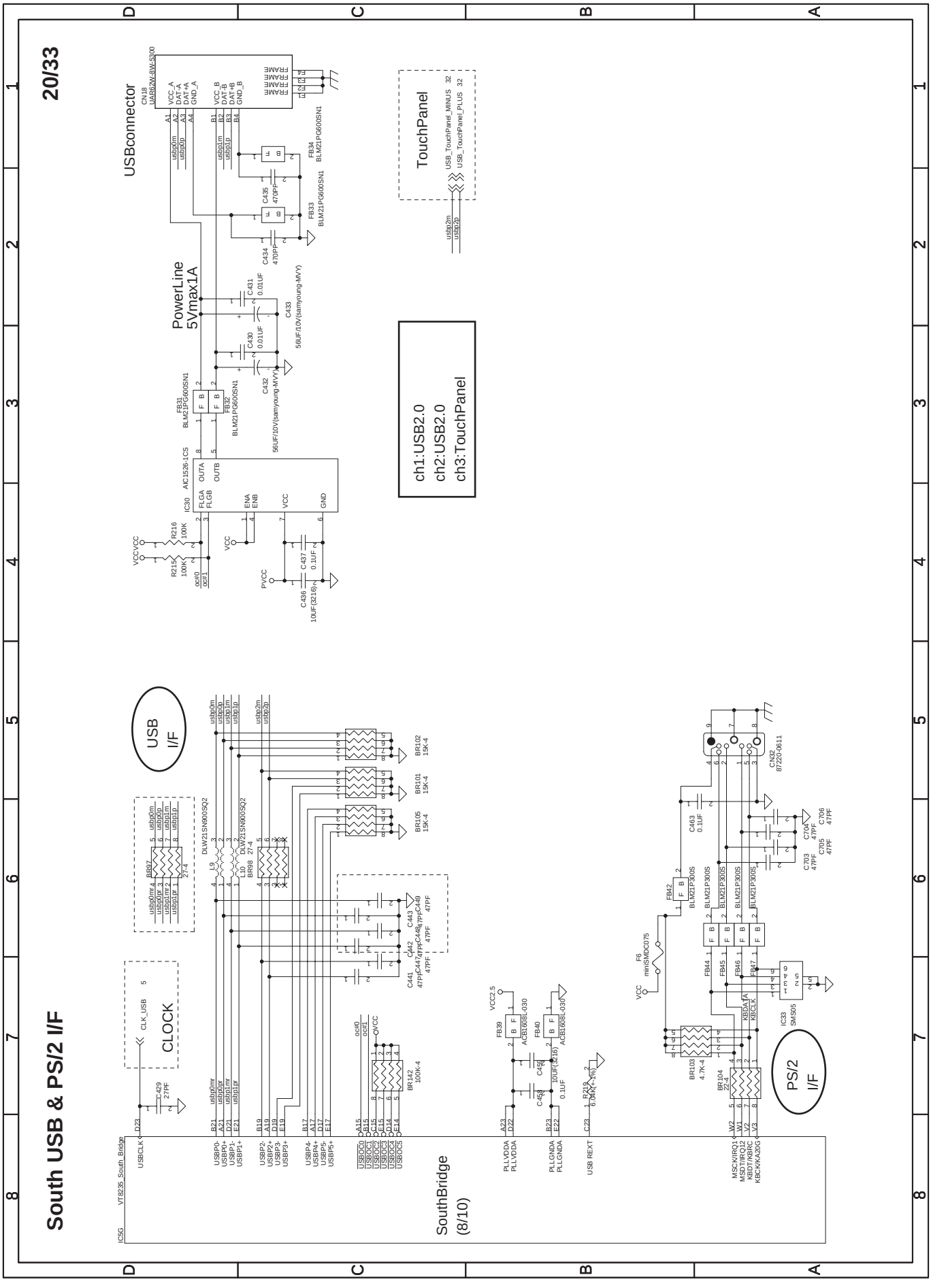
HelpBoard

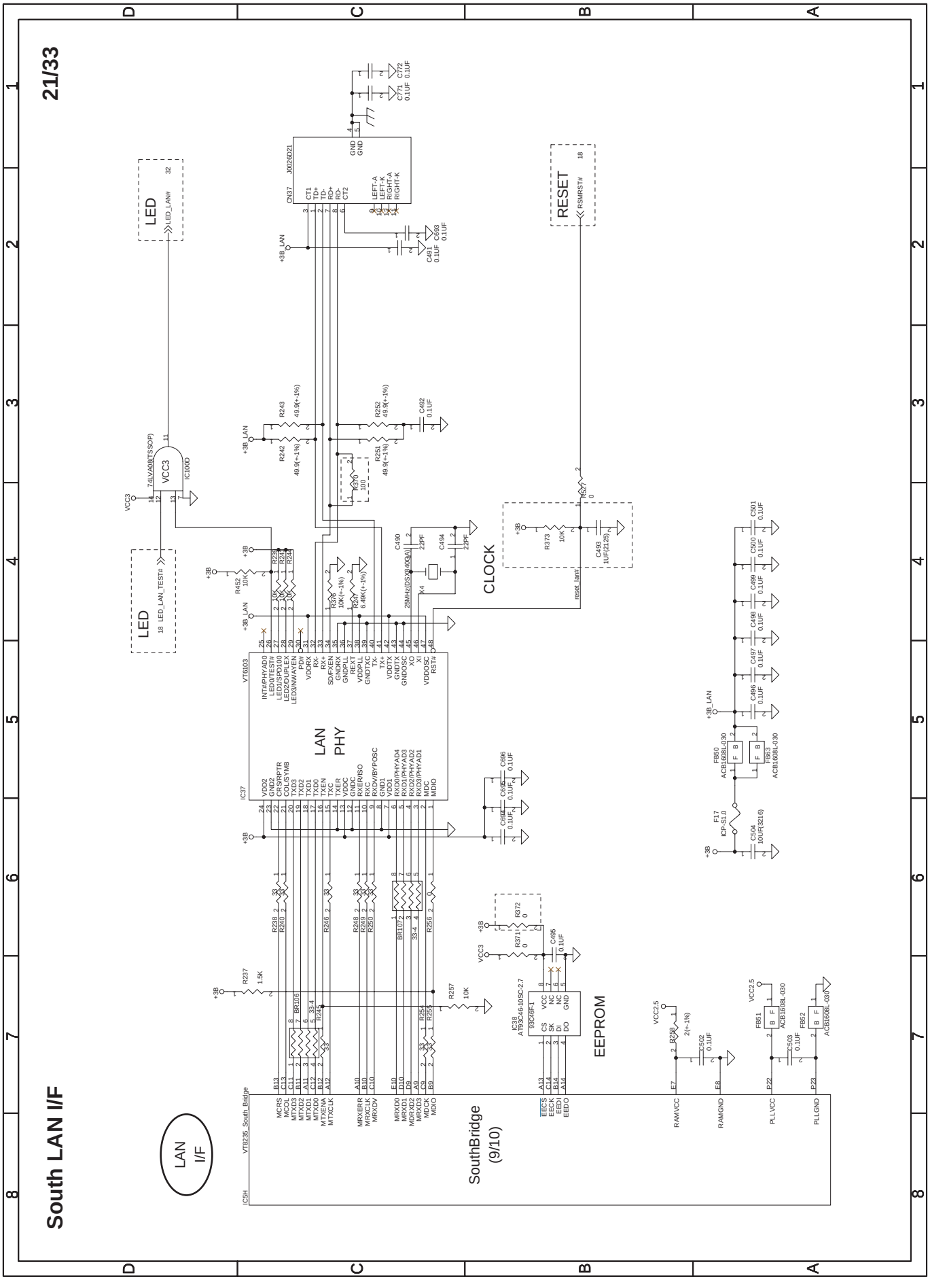


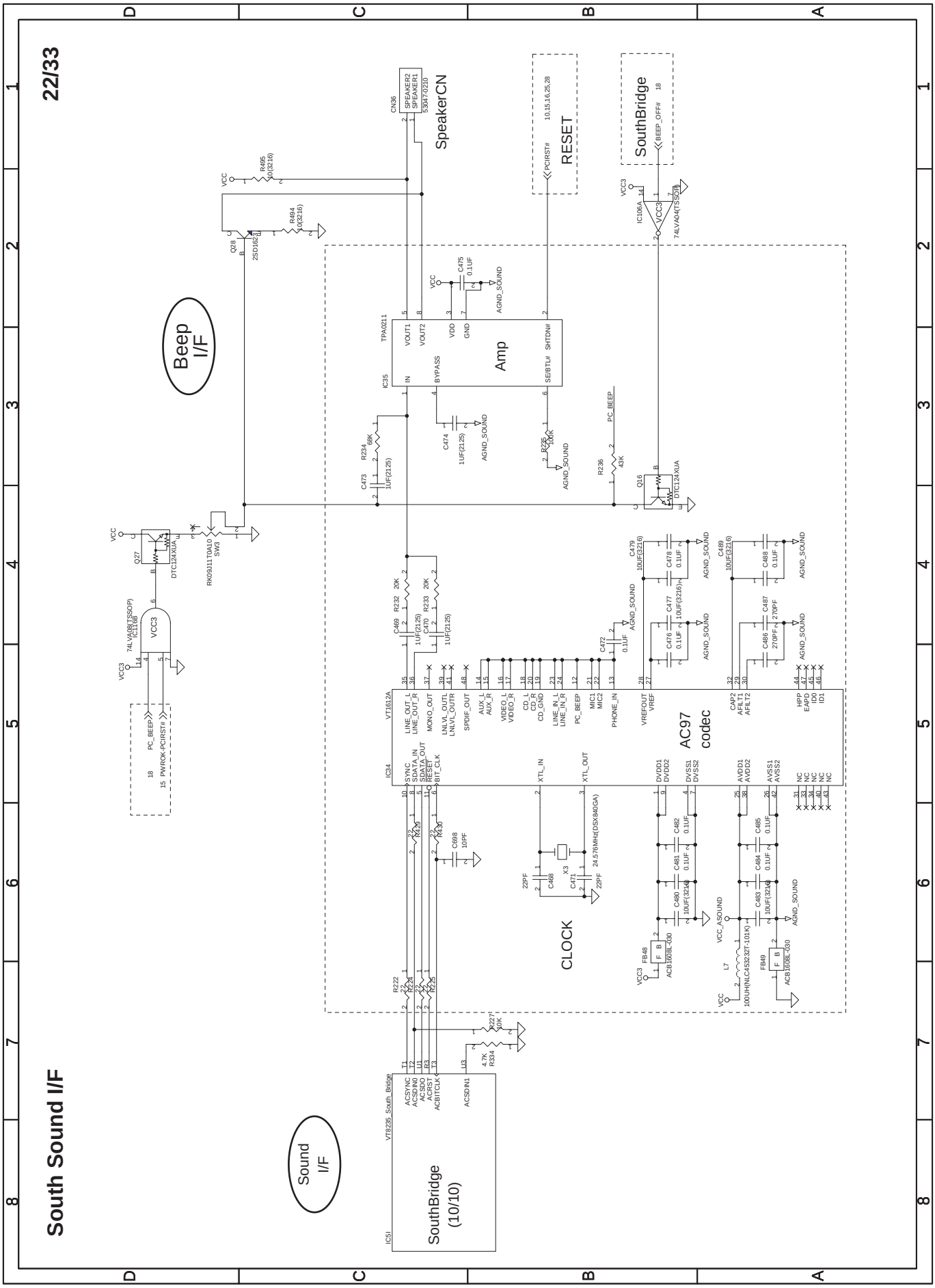
South RTC & PowerManagement & GPIO



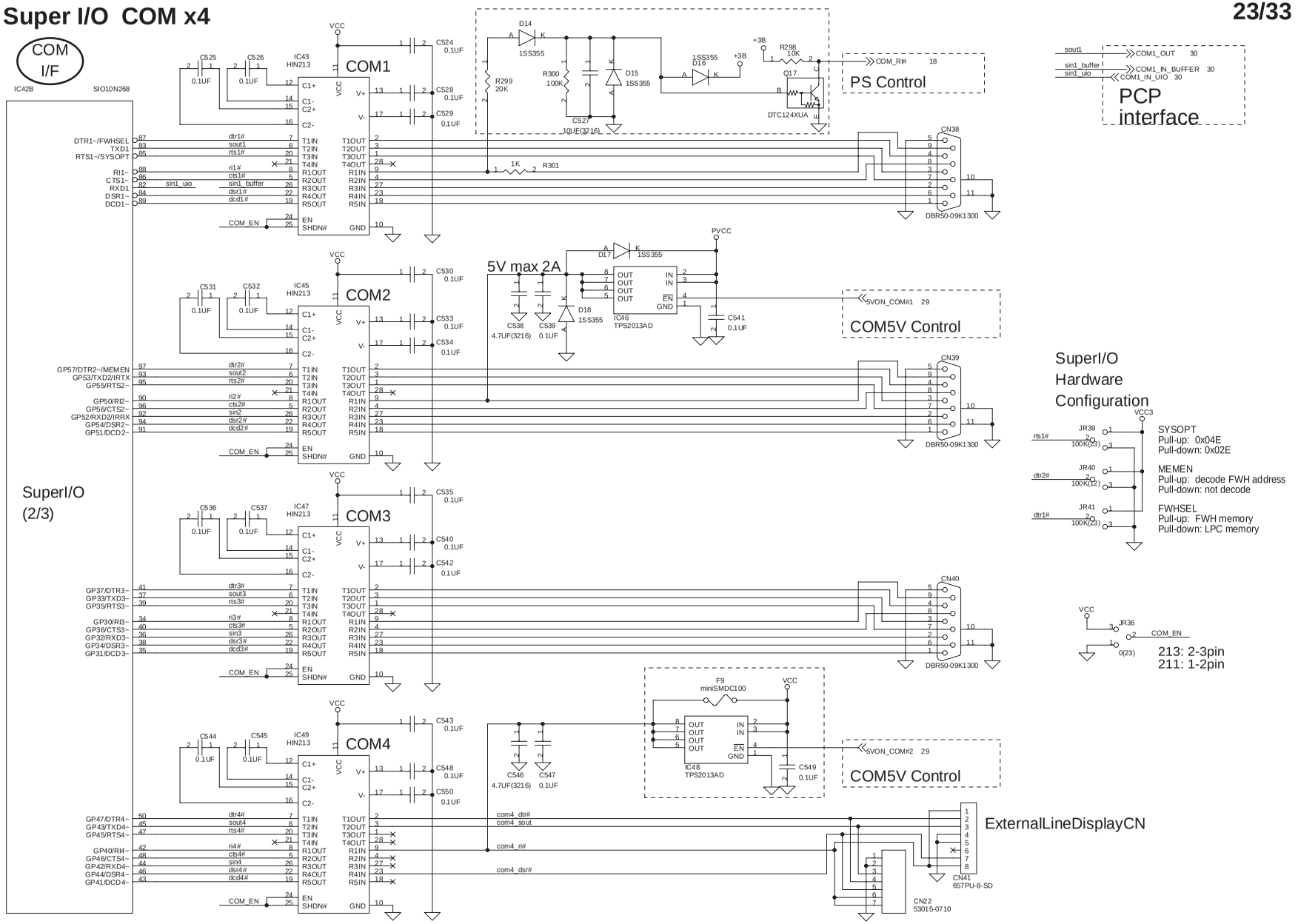

19/33
South IDE I/F
X500実装/X300未実装
X300実装/X500未実装
HDDconnector
PCCARD
IDE I/F
LED
RESET
HDD Contorl
VT8235 South Bridge


20/33
South USB & PS/2 I/F
USBconnector
PowerLine
5Vmax1A
TouchPanel
ch1:USB2.0
ch2:USB2.0
ch3:TouchPanel
USB
I/F
CLOCK
PS/2
I/F
SouthBridge
(8/10)

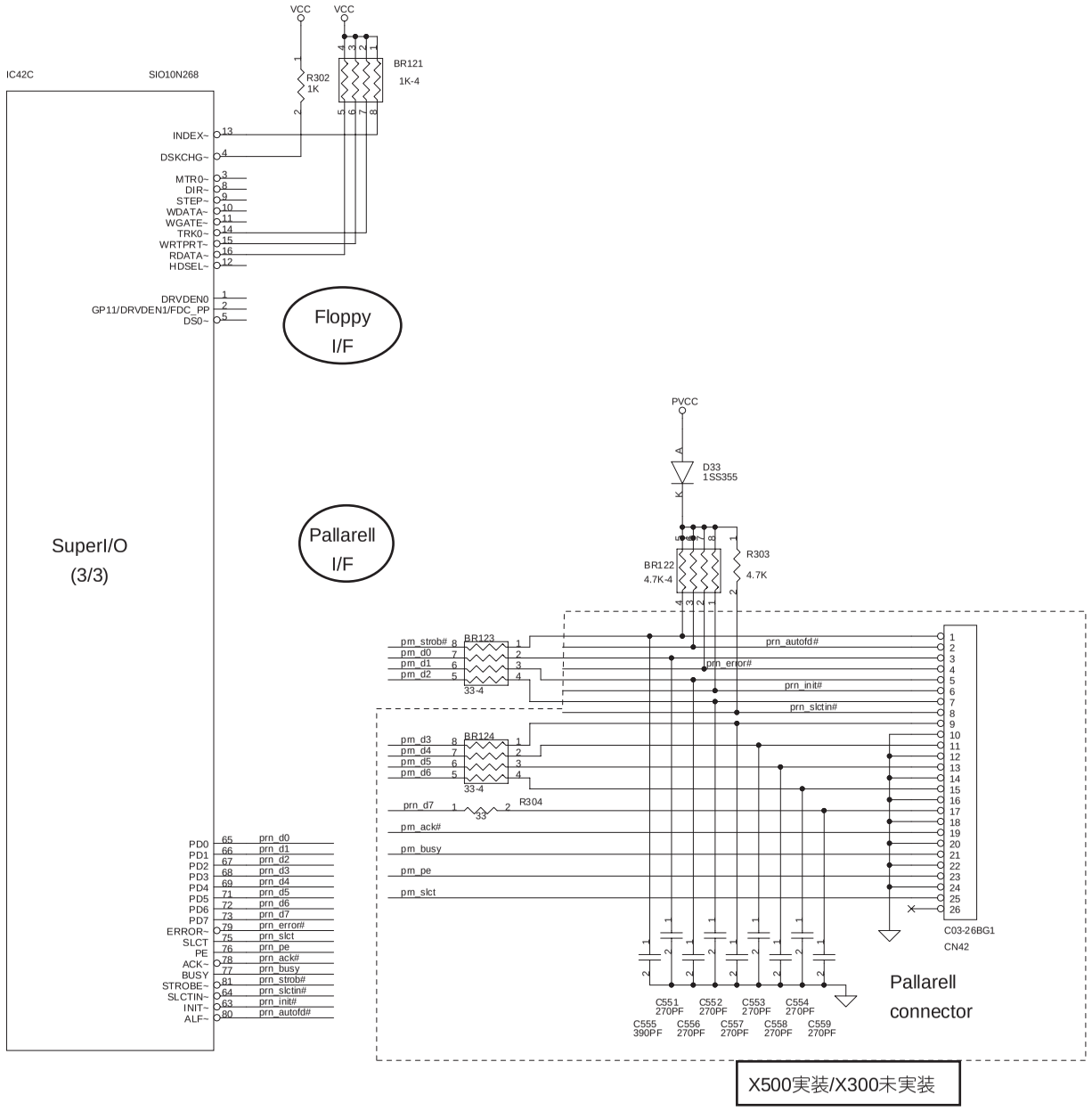

21/33
South LAN I/F
LAN I/F
SouthBridge (9/10)
LAN PHY
CLOCK
EEPROM
LED
LED_LAN#
LED_LAN_TEST#
RESET
RSMRST#
VT8235 South Bridge
VT6103
IC37
IC100D
74LVA08(TSSOP)
IC38
93C46F-1
AT93C46-10SC-2.7
CN37
J0026D21
25MHz(DSX840GA)
X4
reset_lan#
MCRS
MCOL
MTXD3
MTXD2
MTXD1
MTXD0
MTXENA
MTXCLK
MRXERR
MRXCLK
MRXDV
MRXD0
MRXD1
MDRXD2
MRXD3
MDCK
MDIO
EEC5
EEDI
EEDO
RAMVCC
RAMGND
PLLVCC
PLLGND
LEFT-A
LEFT-K
RIGHT-A
RIGHT-K
GND
CT1
TD+
TD-
RD+
RD-
CT2
INT#/PHYAD0
LINKST#/PHYAD1
LED1/SPD100
LED2/DUPLEX
LED3/NWAYEN
VDPDPLL
RX-
RX+
SDFXEN
GNDPLL
REXT
VDDPLL
GNDTXC
TX-
TX+
VDDTX
GNDTX
GNDOSC
XO
XI
VDDOSC
RST#
VDD2
CRS/RPTR
COL/SYMB
TXD3
TXD2
TXD1
TXD0
TXEN
TXC
TXER
VDDC
GNDC
RXER/ISO
RXC
RXDV/BYPOSC
GND1
VDD1
RXD0/PHYAD4
RXD1/PHYAD3
RXD2/PHYAD2
RXD3/PHYAD1
MDC
MDIO
CS
SK
DI
DO
VCC
NC
GND
+3B
+3B_LAN
VCC3
VCC2.5
R237 1.5K
R257 10K
R452 10K
R242 49.9K(+-1%)
R243 49.9(+-1%)
R251 49.9K(+-1%)
R252 49.9(+-1%)
R370 10K(+-1%)
R247 6.49K(+-1%)
R310 100
R373 10K
R217 0
R372 0
R371 0
R258 2(+-1%)
BR1072
BR106
C490 22PF
C494 22PF
C493 1UF(Z5P)
C491 0.1UF
C693 0.1UF
C772 0.1UF
C771 0.1UF
C492 0.1UF
C495 0.1UF
C502 0.1UF
C503 0.1UF
C504 10UF(3216)
C496 0.1UF
C497 0.1UF
C498 0.1UF
C499 0.1UF
C500 0.1UF
C501 0.1UF
C695 0.1UF
C694 0.1UF
FB50 ACB1608L-030
FB63 ACB1608L-030
FB51 ACB1608L-030
FB52 ACB1608L-030
F17 ICP-S1.0


22/33
South Sound I/F
Beep I/F
Sound I/F
SpeakerCN
RESET
SouthBridge
Amp
AC97 codec
CLOCK
SouthBridge (10/10)
IC5
IC34
VT1612A
IC35
TPA0211
VT8235_South_Bridge
CN36
SPEAKER2
SPEAKER1
PCIRST#
10,15,16,25,28
BEEP_OFF#
18
PC_BEEP
PWROK-PCIRST#
VCC
VCC3
AGND_SOUND
VCC_ASOUND
24.576MHz(DSX840GA)
ACB1608L-090
100UH(NLC453232T-101K)
74LVA08(TSSOP)
74LVA04(TSSOP)
DTC124XUA
RK09111T0A10
2SD1052
ACSYNC
ACSDIN0
ACSDO
ACRST
ACBITCLK
ACSDIN1

Super I/O COM x4

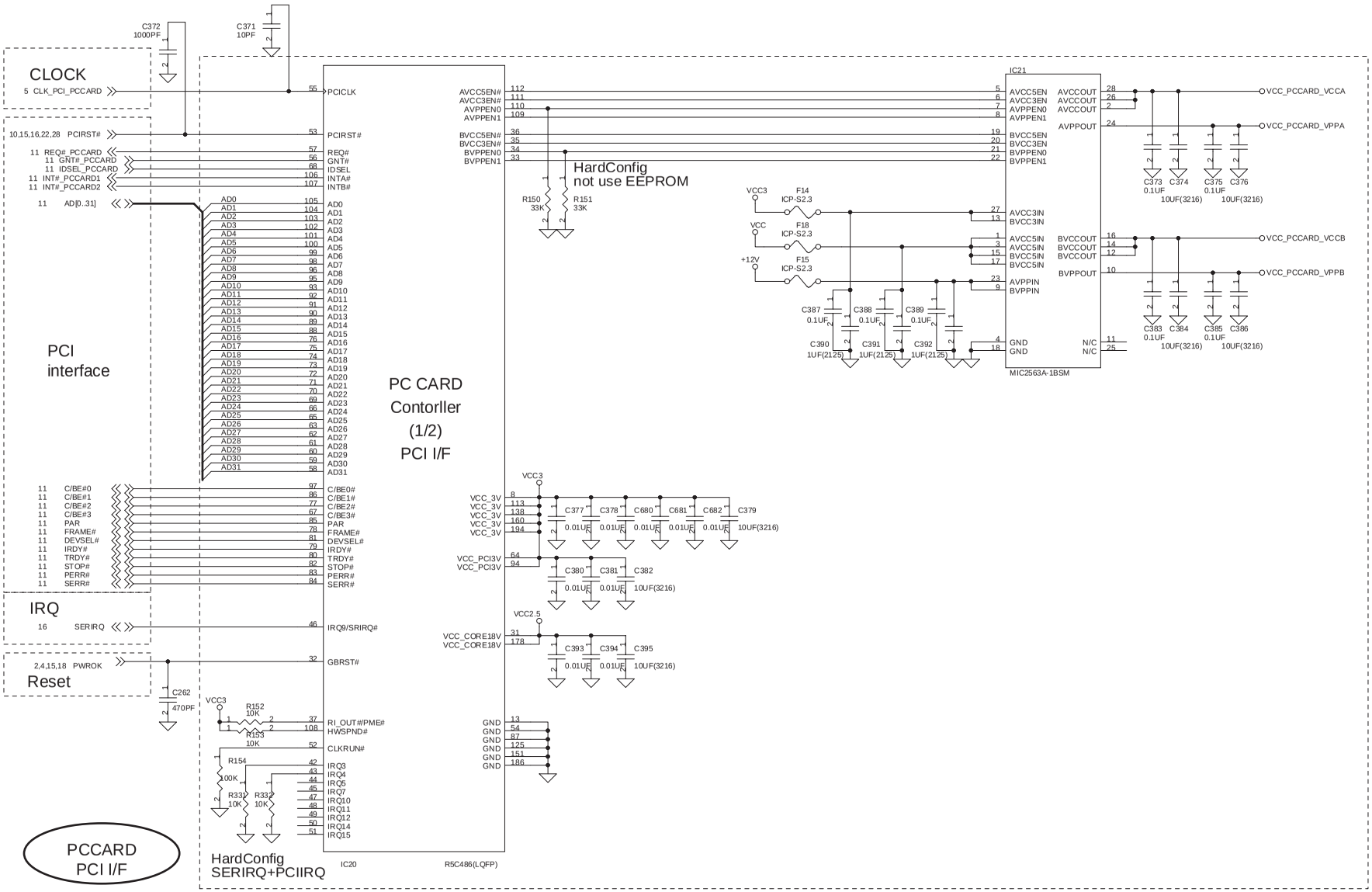


Super I/O Pallarell I/F

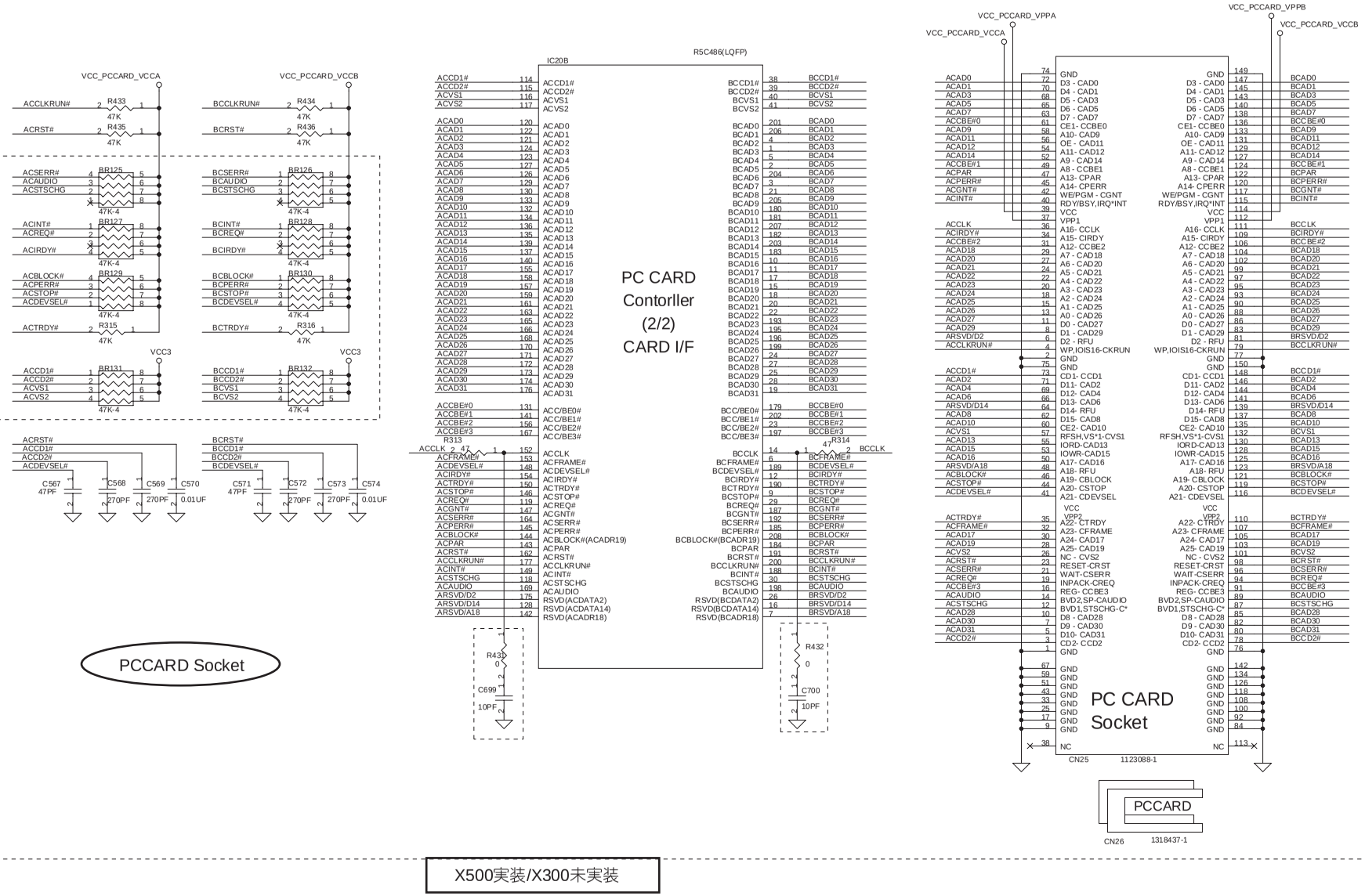


PCCARD (PCI I/F)

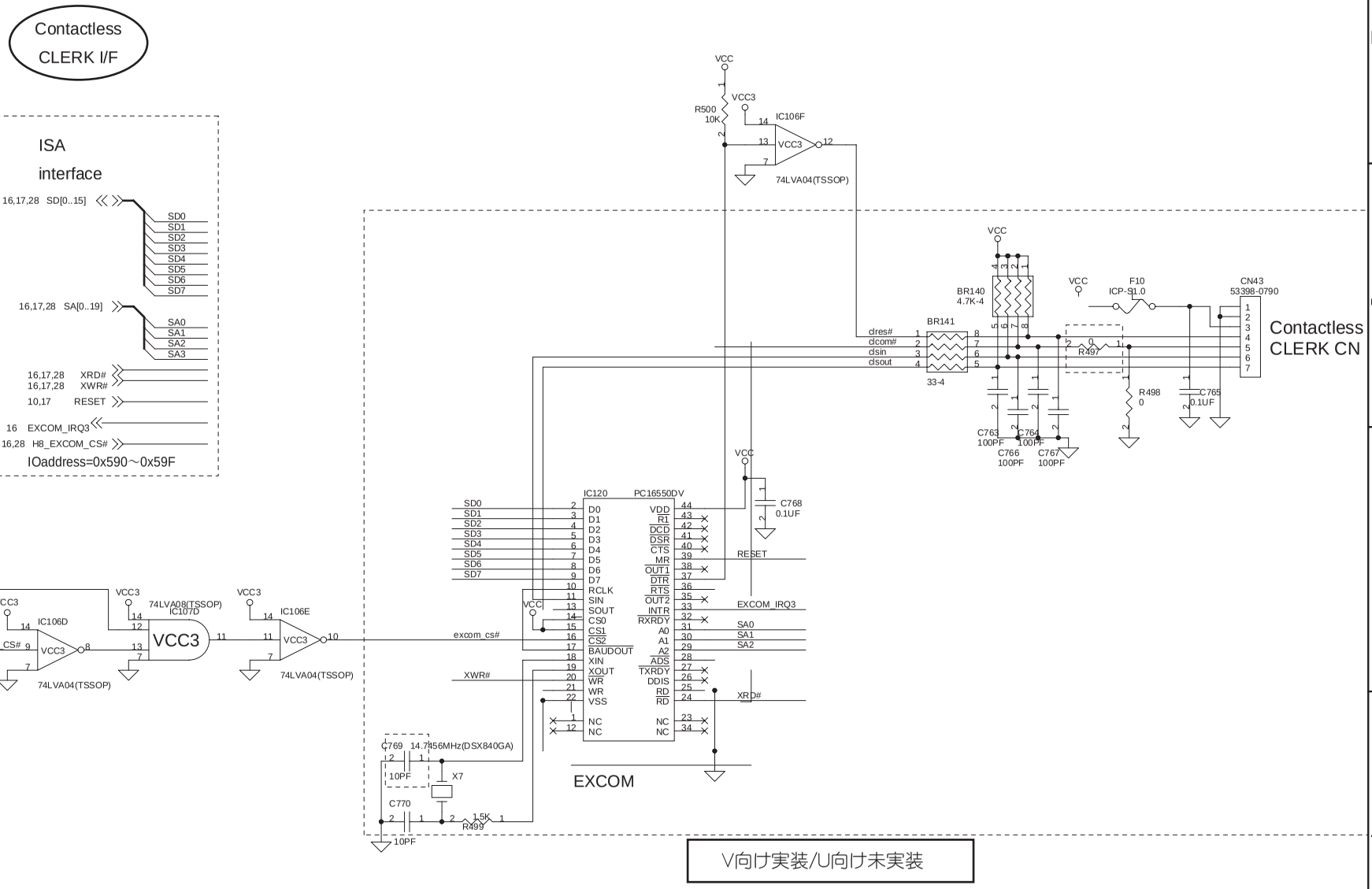
25/33

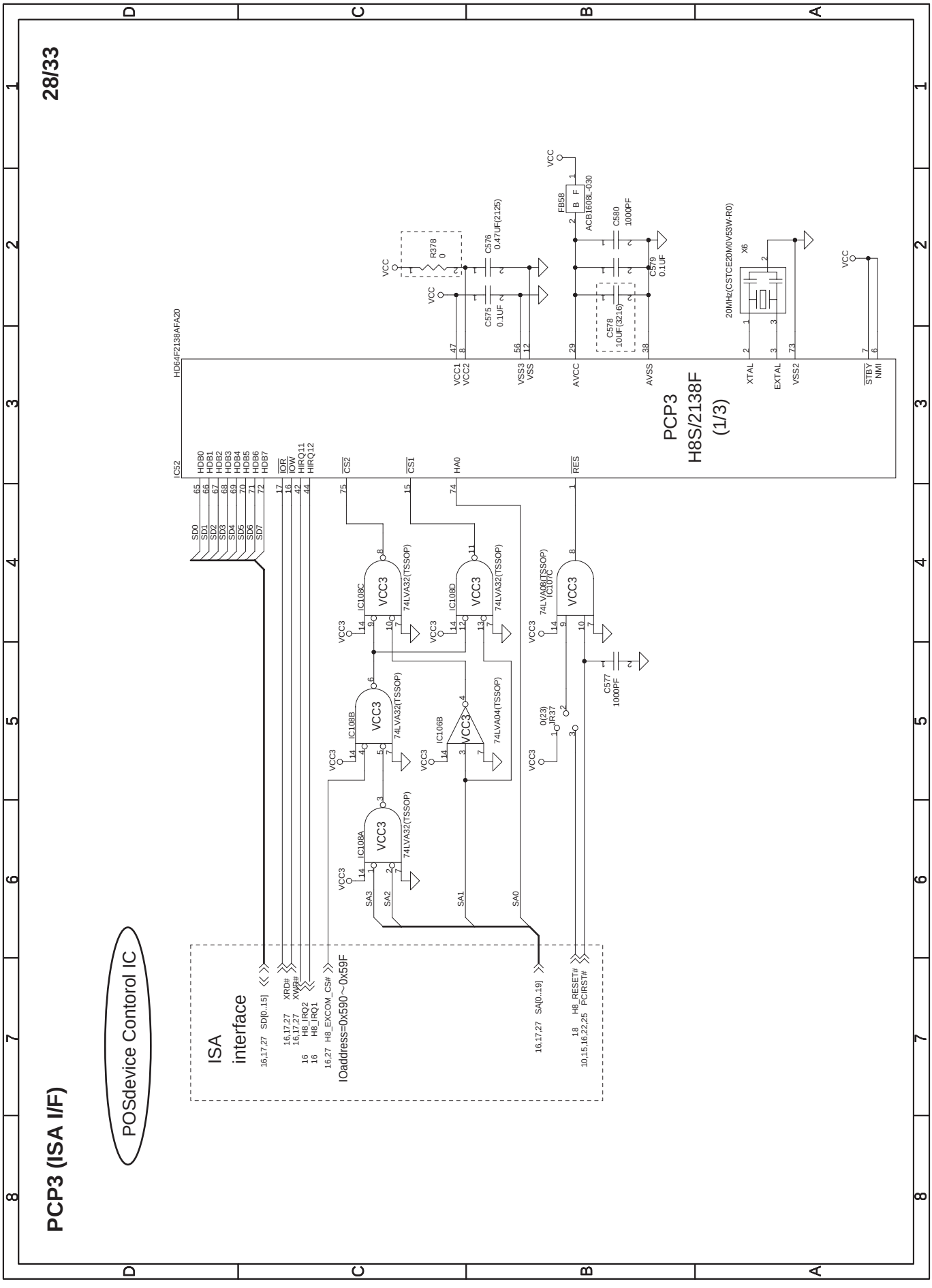


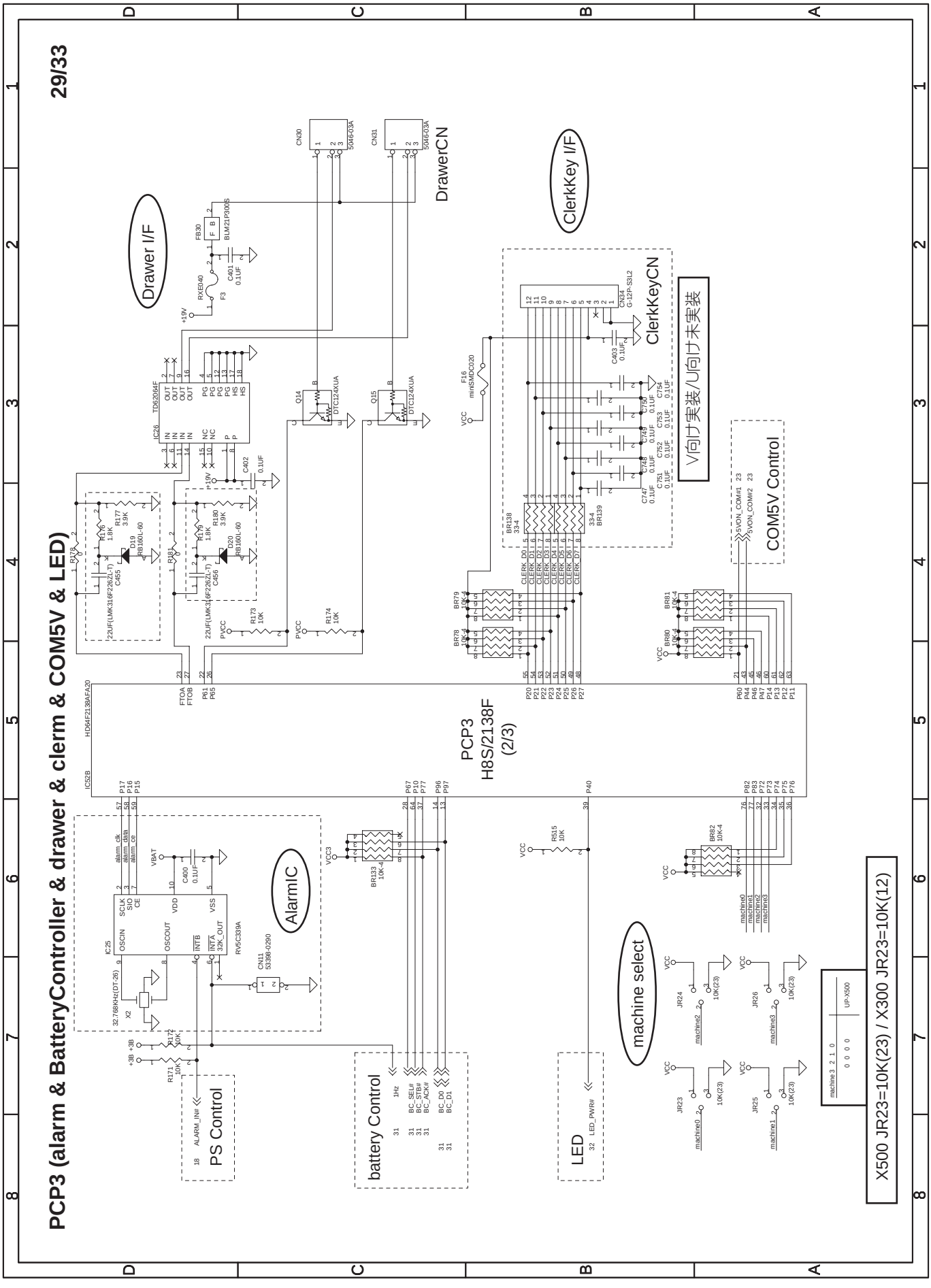
PCCARD (socket I/F)

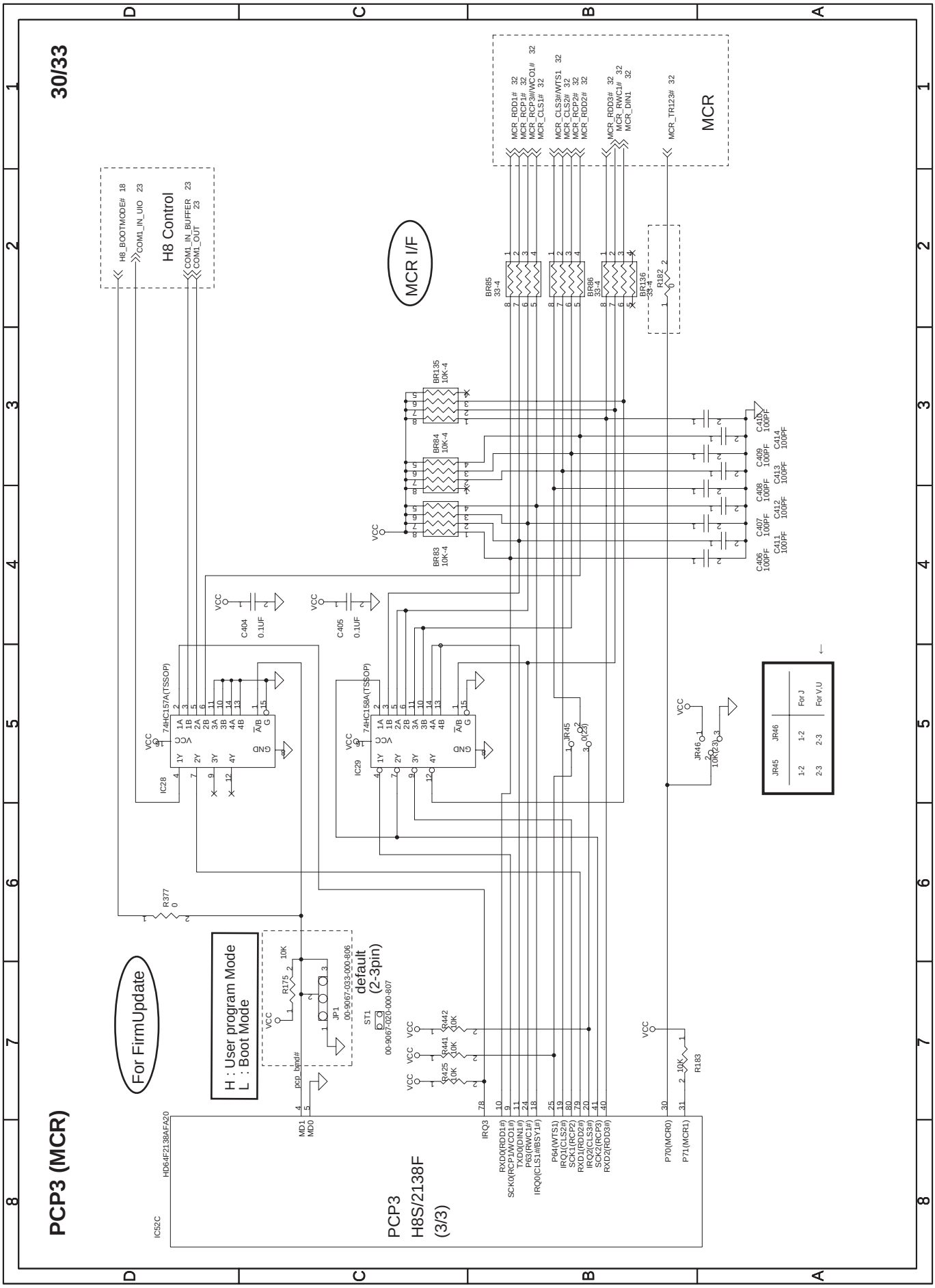


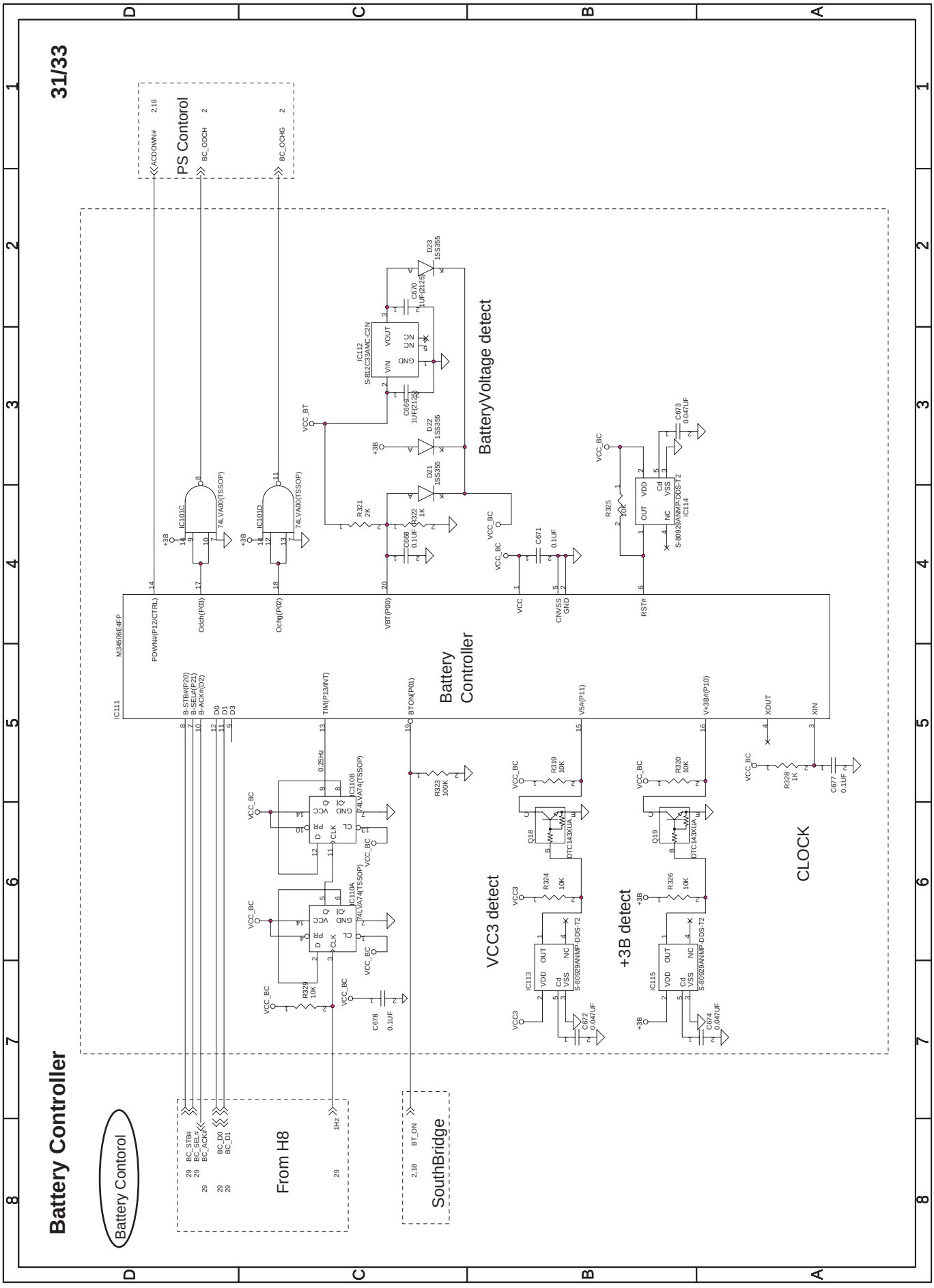
Contactless CLERK Interface



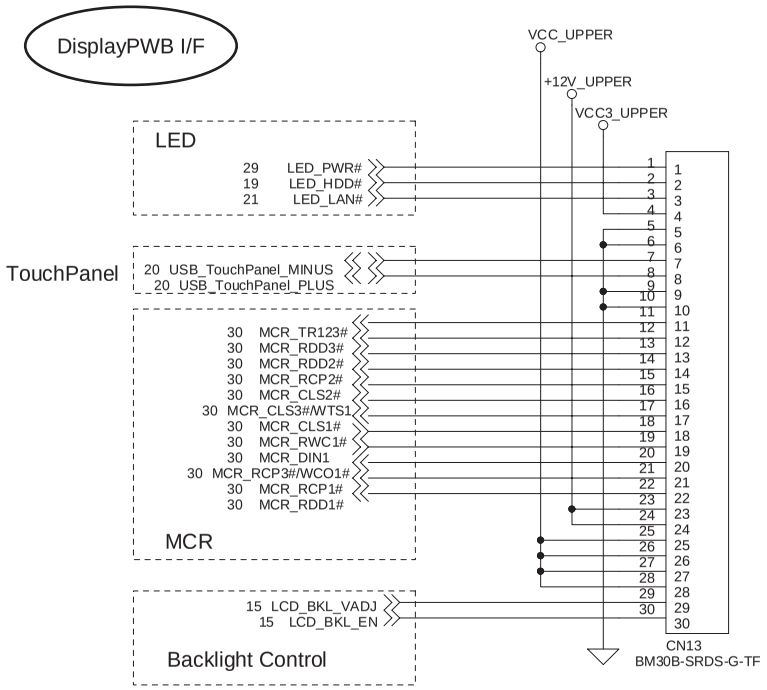

28/33
PCP3 (ISA I/F)
POSdevice Contorol IC
ISA
interface
IOaddress=0x590~0x59F
PCP3
H8S/2138F
(1/3)
HD64F2138AFA20
20MHz(CSTCE20M0V53W-R0)
74LVA32(TSSOP)
74LVA04(TSSOP)
74LVA08(TSSOP)

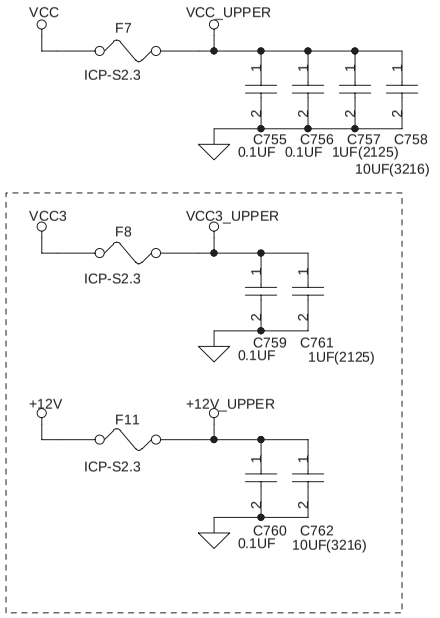

PCP3 (alarm & BatteryController & drawer & clerm & COM5V & LED)
29/33
Drawer I/F
DrawerCN
ClerkKey I/F
ClerkKeyCN
V向け実装/U向け未実装
COM5V Control
PCP3
H8S/2138F
(2/3)
AlarmIC
PS Control
battery Control
machine select
LED
X500 JR23=10K(23) / X300 JR23=10K(12)


30/33
PCP3 (MCR)
H8 Control
MCR I/F
MCR
For FirmUpdate
H : User program Mode
L : Boot Mode
default
(2-3pin)
PCP3
H8S/2138F
(3/3)
HD64F2138AFA20
74HC157A(TSSOP)
74HC158A(TSSOP)
IC28
IC29
IC52C
JR45
JR46
R175
R377
R182
R183
R425
R441
R442
BR83
BR84
BR85
BR86
BR135
BR136
C404
C405
C406
C407
C408
C409
C410
C411
C412
C413
C414
VCC
GND


Battery Controller
31/33
Battery Contorol
PS Contorol
ACDOWN#
BC_ODCH
BC_OCHG
BatteryVoltage detect
Battery Controller
M34509E4FP
IC111
PDWN#(P12/CTRL)
B-STB#(P20)
B-SEL#(P21)
B-ACK#(D2)
Oddh(P03)
Ochg(P02)
VBT(P00)
TIM(P13/INT)
BTON(P01)
V5#(P11)
V+3B#(P10)
RST#
VCC
CNVSS
GND
XOUT
XIN
VCC3 detect
+3B detect
CLOCK
From H8
SouthBridge
Battery Contorol
BC_STB#
BC_SEL#
BC_ACK#
BC_D0
BC_D1
1Hz
BT_ON

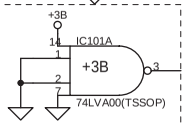
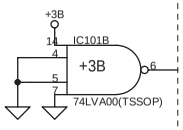
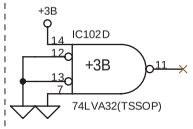
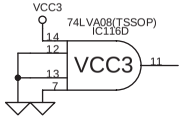
Connectors


DisplayPWB I/F
VCC_UPPER
+12V_UPPER
VCC3_UPPER
LED
29 LED_PWR#
19 LED_HDD#
21 LED_LAN#
TouchPanel
20 USB_TouchPanel_MINUS
20 USB_TouchPanel_PLUS
30 MCR_TR123#
30 MCR_RDD3#
30 MCR_RDD2#
30 MCR_RCP2#
30 MCR_CLS2#
30 MCR_CLS3#/WTS1
30 MCR_CLS1#
30 MCR_RWC1#
30 MCR_DIN1
30 MCR_RCP3#/WCO1#
30 MCR_RCP1#
30 MCR_RDD1#
MCR
15 LCD_BKL_VADJ
15 LCD_BKL_EN
Backlight Control
CN13
BM30B-SRDS-G-TF


VCC
F7
VCC_UPPER
ICP-S2.3
C755 C756 C757 C758
0.1UF 0.1UF 1UF(2125) 10UF(3216)
VCC3
F8
VCC3_UPPER
ICP-S2.3
C759 C761
0.1UF 1UF(2125)
+12V
F11
+12V_UPPER
ICP-S2.3
C760 C762
0.1UF 10UF(3216)

Odd 74series

74series

IC100 74LVA08	IC101 74LVA00	IC102 74LVA32	IC105 74LVC04	IC106 74LVA04	IC107 74LVA08	IC108 74LVA32	IC109 74LVA32	IC116 74VA08
DDRPWROK		PS_ON	RESET	BEEP_OFF	FP_EN	H8	help	FP_EN
CPUPWROK		ACDOWN#	RESET	H8	BTON	H8	help	BEEN
PWROK	BC	PWRSWITCH	RESET	help	H8	H8	help	FP_EN
LAN	BC		RESET	EXCOM	EXCOM	H8	help	
			RESET	EXCOM				
			RESET	EXCOM				

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